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AMERICAN ANTIQUITY

VOL. VI OCTOBER, 1940 NO. 2

EDITORIALS

MY FIRST archaeological experience taught me something not found in books. As we jogged across northeast Arizona a-horseback, stopping now and then to look at a surface ruin or a rock-shelter, I peppered the elders of the expedition with questions. I wanted to know who these people were and when they lived and why they went away and where they went and a great deal else. Finally, the leader said, "If we could answer all those questions we wouldn't have left Boston." That was a new thought. I had supposed that archaeologists knew archaeology as farmers know hay.

Many newcomers to archaeology, whether students or laymen, have that same impression. A man who lived in the blistering Nevada desert for his health's sake started "hunting Indian things" by way of pastime. His interest grew with his collections and soon he was reading everything he could find on the subject. It wasn't very much, he complained to us one day at Southwest Museum. Who was the authority on his region, he wanted to know. When we told him he was, he went into a fine dither. He was no scientist, he'd never studied archaeology, he'd only expose his ignorance if he opened his mouth on the subject. He was only trying to learn. So were we all, we assured him, so why not get in the game and add his bit to the scanty store of data on his pet subject? Others had helped him, now he could help them. If he didn't want to be an archaeologist or an authority, we'd promise not to call him those names, at least not in public. He could be just an ordinary citizen, writing down what he observed and discovered. Now he's a member of the Society.

How many persons are cheating themselves and archaeology alike because of the notion that you've no business raising your voice unless you can talk the professional patter and know all the answers? To what extent are we professionals fostering that notion by an attitude that seems to proclaim us the priests of a weighty ritual? The best assurance here is the existence of our Society, in which all who have a true interest in archaeology (not relic-hunting) may meet on common ground. Amer-

ican archaeology is more than ordinarily free of that taint of snobbery for which so many people despise and distrust all things academic. But it's something to have in mind, this tendency of the amateur to overrate the professional and of the latter to underestimate the amateur. It raises a barrier where none should exist.

CHARLES AMSDEN

MINORITY rule seems to be the fashion in the Society for American Archaeology, judging by the turn-out for the business meeting at Indianapolis. It is true that nothing exciting seems to occur at these meetings, yet it is somewhat disappointing to see the Society represented each year by hardly more than a double handful of members. In this small group there are two or three men, often the same individuals from year to year, who are responsible for making and seconding motions during the meetings. People who are unable to come to the meeting cannot be expected to vote, but as long as the majority of those in attendance adjourn to the cloakrooms as soon as business comes on the floor, the few enthusiastic members will continue to elect the officers, and control the policies of the Society.

OUR ASSOCIATE EDITOR. Dr. George C. Vaillant has agreed to act as Associate Editor of AMERICAN ANTIQUITY. The Society for American Archaeology is fortunate indeed in having Dr. Vaillant on the editorial board. He needs no introduction to students of Mexican Archaeology who have watched with admiration the way in which he brought order to what seemed a hopeless jumble of pre-Toltec "barbarians" in the Valley of Mexico. He has long been a Curator of the American Museum of Natural History in New York, a position temporarily abandoned to assume a more active position in connection with the Museum's appeal to the public. The Society owes a debt of gratitude to him for consenting to join the editorial board in the face of his many duties. Space in these pages is always open to him, and we shall hope to hear from him before long.

GEOMETRIC DESIGNS ON MIMBRES BOWLS

(THE GUNNISON COLLECTION, IX)

C. T. HURST

IN A series of eight former articles, published elsewhere, the writer has described the designs on many of the prehistoric pottery vessels in the collection of the Museum of Archaeology of The Western State College of Colorado. Of these eight articles, the last three[1] have dealt with the designs on Mimbres vessels. Of the thirty-four vessels of this culture illustrated in these three papers, all but eight show naturalistic art in their decoration. The present, and subsequent papers will deal with geometric forms exclusively.

The Mimbres culture developed in southwestern New Mexico in the valley of the Mimbres River and adjacent regions. It is one of the smallest of the more or less definitely delimited southwestern culture areas. From the standpoint of variety of design, the black-on-white type of pottery reached its greatest degree of specialization in this region in prehistoric times. Mimbres pottery shows a most amazing variation, amounting to almost unlimited profusion of naturalistic and geometric designs that go far beyond that seen in other parts of the Southwest.

In the other regions, far flung over New Mexico, Arizona, Colorado, and Utah, pottery designs are preponderately geometric. The naturalism that does appear is, in most cases, more or less conventionalized. The Mesa Verde treatment of certain bird forms would be a case in point that would illustrate the general method. The birds are recognizable as birds, but that is all; they do not resolve themselves into identifiable species. On the other hand, Mimbres drawings of birds are usually definitely clear, in most cases, as to what they are. The same is largely true of human, animal, and insect forms. Many life forms are, however, composite, bizarre, and even conventionalized.

Mimbres decorative art includes three general types. These are (1) purely geometric, (2) purely naturalistic with or without conventionalization and with or without symbolism and with or without a minimum of geometric elements, and (3) definite combinations of geometric and naturalistic elements combined into a complete design. These three types are almost infinite in their variations. No two have ever been found that are alike.

An approach to similarity will occasionally be seen, as for instance

[1] Hurst, 1937, 1938*a*, 1938*b*.

between one bowl illustrated herein (Fig. 11, 7) and one illustrated by Bradfield[2] in his paper on the Cameron Creek Village. A very interesting resemblance in general conception between two naturalistic designs that have been recorded in the literature appears in the case of two bowls, one published by Fewkes[3] in his paper on Mimbres designs and the other by Hurst[4] in one of the former contributions on this pottery. It is quite possible that the two bowls are the product of the same artist.

According to Kidder,[5] since Mimbres naturalism is so widely different it must have been the product of a local school—a following in the footsteps of some forgotten genius. The black-on-white as a general type, however, was undoubtedly in the general southwestern tradition. But, its highly specialized period had but little influence exerted upon it from the outside, and, in turn, it exerted but little influence upon other wares. This would argue that it arrived relatively late and persisted for but a comparatively short time.

Technically, the Mimbres bowl is not to be rated as high as some of the other southwestern products; but, for sheer boldness of conception and often rich harmony and beauty of design it has no equal in Southwestern prehistoric art. Like all other art developments among any people, and at any time, it shows signs of the seeds of decay in its own structure.

Both naturalistic and geometric art in Mimbres vessels follow, in the great majority of cases, a well-regulated plan of architecture. Jenks[6] recognized this in his paper on the architectural plans of geometric art in Mimbres bowls. He described the 1-unit, the 2-unit, 3-, 4-, 5-, and 6-unit arrangements of designs, as well as the asymmetric type. The 1-unit plan conceives of the design as a single unsegmented area. The 2-unit plan permits the division of the decorated area into halves by the design. The other unit types divide the space into thirds, fourths, fifths, and sixths, respectively.

It would appear that Jenks[7] is concerned primarily with units of space in delimiting his various types. The impression of space division as visualized by the observer determines the type. This is clear, and it is easily applicable to the great majority of Mimbres pottery vessels of the decorated type. However, when one considers units of design, there are cases when this architectural plan cannot be easily applied. This does not, naturally, affect the validity of the system.

[2] Bradfield, 1929, Plate LII, Fig. 49.
[3] Fewkes, 1923, Fig. 6.
[4] Hurst, 1938*a*, Plate II, Fig. 3.
[5] Kidder, 1924, p. 103.
[6] Jenks, 1932.
[7] *Ibid.*, pp. 23, 32, 37, 42, 52, 56.

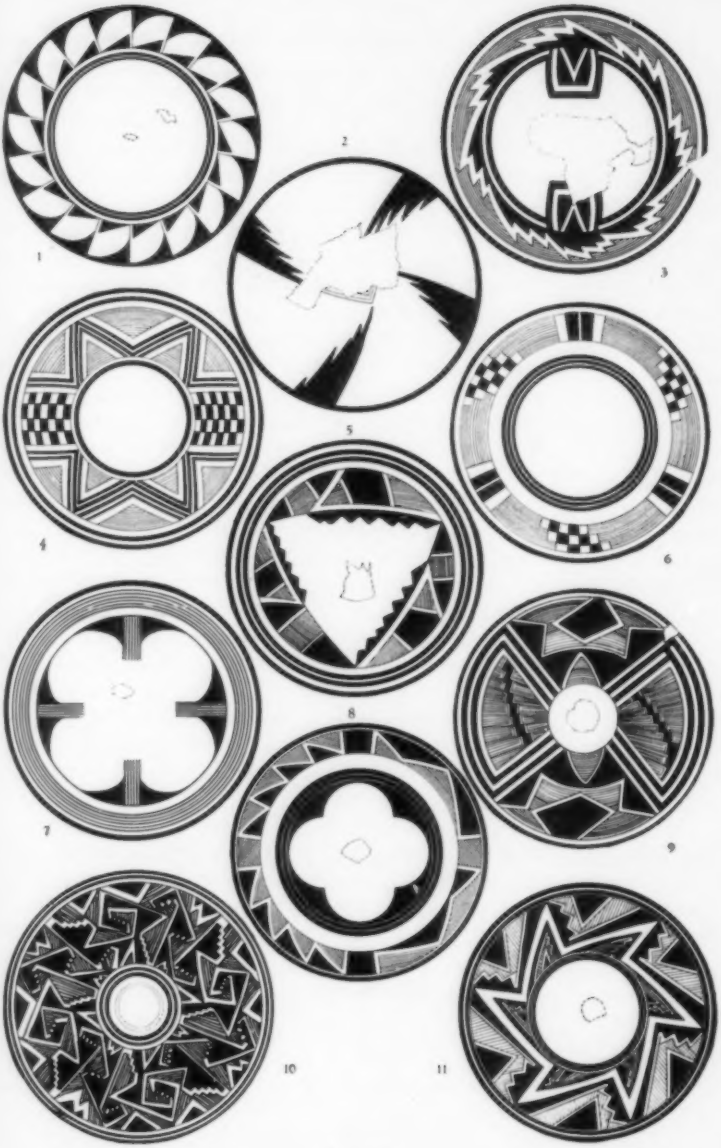

FIG. 11

In the end, in order to get a full picture of Mimbres art, it may be necessary to amend the various designations by taking into account the various elements of design such as borders, panels or bands, and centers.

Of the eleven vessels (ten bowls, one olla) illustrated in Fig. 11, only one shows the 1-unit organization. This bowl (Fig. 11, *1*) shows a whorl of repeated feather tips. The one unit of decorated space completely encircles the bowl and is made up of repeated identical motifs. According to Jenks,[8] "The simplest form of the one-unit plan may consist of lines similar to frame lines parallel with or near the rim of the bowl, but in contrast to frame lines, these lines make up the entire decoration of the bowl. Except the rare bowl whose entire decoration is its frame-like lines, the design of the one-unit plan of Mimbres bowls possesses distinctive geometric variation. It is a unique, imaginary adventure in ornamentation."

The white (negative) feather-tip ornamentation of this first bowl is quite clearly a variation of a type that may be treated otherwise. One illustrated by Jenks[9] possesses frame lines and carries all the shafts of the feathers to the center of the bowl, with the central area of the bowl composed of a black solid circle crossed by radiating white lines. The one illustrated by Fewkes[10] shows a much smaller black central area composed of two concentric areas separated by a white line and with a supplementary quadrilateral terraced figure in the innermost area. The latter figure is also bordered by a white line. Minor differences exist in these three illustrations in the feathers themselves, but the general impressions are identical.

A few further examples of 1-unit designs may be seen by reference to Fewkes' first[11] and second[12] papers on Mimbres designs and also in Bradfield's[13] paper on Cameron Creek Village, among others that could be cited, but these are sufficient. (*See also* Cosgrove et al.)

Two bowls (Fig. 11, *3* and *4*) show the 2-unit plan of design construction. The ideal construction of the 2-unit plan would present the two sides of a design as mirror images of each other. In Mimbres designs this is sometimes the case but more often it is not.

[8] *Ibid.*, p. 24.

[9] *Ibid.*, Bowl 412.

[10] Fewkes, 1923, Fig. 120.

[11] *Ibid.* (naturalistic) Figs. 1–6, 10, 13, 15–18, 20, 24, 27, 28, etc., (geometric) 137, 139, 140.

[12] Fewkes, 1924 (naturalistic) Figs. 1, 4, 6, 7, 10, 11, 13, 15–17, etc., (geometric) 74, 83, 84, 92 etc.

[13] Bradfield, 1929, Figs. (naturalistic) 384, 361, 311, etc. (geometric) 111, 281, 395, etc.

Since the designs of these 2 two-unit bowls are quite clear from the figures, it will not be necessary to give a wordy description of them. One of them (Fig. 11, *4*) is of the ideal type since the right and left sides are symmetrical, if one disregards the exact number of checks in the checkered areas. In the other direction, symmetry falls short of the absolute ideal in that one M-shaped series of lines has one more line than the other.

The other 2-unit bowl (Fig. 11, *3*) shows true symmetry only in the block-and-V elements. The whorl sweeps around the bowl with all its points directed the same way, like the teeth of a circular saw. Consequently, symmetry is imperfect in terms of mirror imagery. This latter placement of designs on the two sides of a 2-unit composition is by far the more common and it is seen in both naturalistic and geometric art, and in combinations of the two. Minor alterations in the duplication of paired designs (such as changes, additions, or subtractions), that do not spoil the harmony of the design as a whole, are very frequent. The reader will find ample illustrations of the 2-unit type of design construction in the literature[14] on Mimbres pottery.

In the published figures of the 2-unit type, by various authors—those cited herein as well as others—naturalistic examples will show the units (animals, men, etc.) facing in opposite directions. Execution of the designs will be such that they will be almost identical. Minor variations may be exemplified in such items as teeth and no teeth, respectively, in the mouths of the two opposed figures; one face may be positive and the other negative; legs may assume slightly different poses. Geometric designs may vary in a dot or another element, or in the treatment of a hatched area or of a zigzag, etc. Minor variations, such as the foregoing examples, will also appear in 2-unit designs that are mirror images.

Three-unit patterns are of several types. In the naturalistic or geometric treatment, or combinations of the two, they are with identical single or alternate elements, or with minor changes in individual ones. In the simple 3-unit pattern, only one element is repeated three times.[15] A modified, or bipartite, pattern alternates six elements in two treatments.[16] The great majority of bowls that show the 3-unit plan display

[14] A few cases are: Reversed symmetry, Fewkes, 1923, Figs. (naturalistic) 8, 9, 19, 22, etc.; 1924, Figs. (naturalistic-geometric) 3, (naturalistic) 12, 18; Bradfield, 1929, Figs. (geometric) 352, (naturalistic) 85. Mirror symmetry, Fewkes, 1924, Figs. (naturalistic) 19, (geometric) 82.

[15] Fewkes, 1923, Fig. 51; Bradfield, 1929, Figs. 105–28.

[16] Fewkes, 1923, Figs. 116, 117; 1924, Figs. 65, 66, 76; Bradfield, 1929, Figs. 321, 116; Hurst, 1928*b*, Fig. 16.

the design in radial arrangement. A few show three transverse panels.[17] Departures from identical execution of designs, although usually only minor, may involve addition of an entire figure. A good illustration of this is one design figured by Fewkes[18] in which three chevron-like geometric elements depend from the rim and three butterflies occupy the three wide white spaces. One human figure is included to destroy the true 3-unit construction of the design.

Of the designs illustrated herein, two (Fig. 11, *5* and *6*) show the 3-unit plan; the former is of the simple 3-unit, and the latter is of the bipartite 3-unit plan. In the former, the motifs are not identical but nearly enough so that the impression of uniformity is not destroyed; in the latter, the alternate motifs are clearly identical. As a minor sidelight, it may be that the parallel black motifs in this latter case, spaced between the staggered checkered areas, are representations of deer tracks.

Four-unit designs exist in at least four major types, all of them with or without symmetry (mirror imagery) and with or without lack of identity of motifs. The simplest form is that in which the inner surface of the bowl is divided into quite similar quarters by the design. Two of our specimens are of this type. One (Fig. 11, *2*) does not show symmetry and the other (Fig. 11, *7*) does.

Since the 4-unit type appears to be by far the most common type in Mimbres art, the published figures[19] show numerous samples of the simple four repetitions of one unit.

In the second type, two opposed areas are similar, and the other two opposed areas are similar to each other but different from the first two. Our Fig. 11, *9* shows a very good example of this. In this figure exact symmetry is seen only in part; certain motifs are reversed. Published figures[20] show numerous varieties of this subtype.

In the third type, involved 4-unit patterns, the construction of the design is not apparent at first glance. One must study it before the plan resolves itself. A study of the olla design (Fig. 11, *10*) will reveal that, if not in spaces, at least in design, it follows the 4-unit construction. Examples of this are not so common.[21]

[17] Bradfield, 1929, Figs. 110–28.

[18] Fewkes, 1924, Fig. 2.

[19] A few are: Fewkes, 1923, Figs. 105, 107, 109; 1924, Figs. 61–63, 69, 73; Bradfield, 1929, Figs. 258, 333, 378, 429, 108–28.

[20] A few cases are: Fewkes, 1923, Figs. 11, 14, 23, 48; 1924, Figs. 67, 89; Bradfield, 1929, Figs. 271, 123–28, 300, 170, 317, 218.

[21] Two are: Fewkes, 1923, Figs. 122, 123.

A fourth variety is the compound one. This is where a 4-unit center may possess a 2-unit border. Other numerical combinations may also be found. In our figure (Fig. 11, *8*) a definite impression of 4-unit construction is imparted by the central area. However, the border motifs are paired and symmetrical—2-unit in arrangement. In at least two published figures[22] the borders are 4-unit and the centers are 2-unit, a reversal of the above-described arrangement. In one case[23] a 4-unit border surrounds a 1-unit center. In another, illustrated by Fewkes,[24] a 4-unit center is enclosed within a 6-unit border. A last plan is that wherein four repeated elements alternate with four others,[25] giving, in effect, a bipartite construction similar in principle to bipartite 3-unit plans as described in a foregoing paragraph.

Five-unit and 6-unit bowls are relatively uncommon in Mimbres ware. Our collection contains none of the former. The one 6-unit example illustrated (Fig. 11, *11*) shows a whorl composed of six complex repeated motifs that are almost identical in form. Not many 5-unit types can be found among published figures.[26] Six-unit ones are a little more common.[27]

Including the present paper, the designs of forty-five of the Mimbres vessels in our collection have been recorded in figures. A great many more, belonging to the various unit types, remain to be given attention.

Of the ten bowls illustrated, only two (Fig. 11, *4* and *6*) fail to show the mortuary "killing." All are slipped only on the inside, and some (*1*, *3*, *6*, and *7*) are wholly or partly overfired so that the color has suffered material alteration to reddish and yellowish.

Data on sizes, etc.:

Fig. No.	Diameter in inches	Depth	Remarks
1	8	3¾	Wholly reddish and yellowish
2	7 to 7½	3	Thick, crude Slightly obovate
3	10	5	Wholly reddish and yellowish
4	6 to 6½	2½	Not "killed" Slightly obovate

[22] Hurst, 1937, Fig. 6; 1938*a*, Fig. 10.
[23] Hurst, 1938*b*, Fig. 1.
[24] Fewkes, 1923, Fig. 103.
[25] *Ibid.*, Figs. 104, 129.
[26] *Ibid.*, Figs. 102, 119; Bradfield, 1929, Fig. 76; Jenks, 1932, Bowls 266, 108, 226.
[27] Fewkes, 1923, Figs. 99, 112; 1924, Fig. 75; Bradfield, 1929, Figs. 46, 163; Jenks, 1932, Bowls 202, 150.

Fig. No.	Diameter in inches	Depth	Remarks
5	8¾ to 10½	4½	Markedly obovate
6	7	3½	Partly reddish and yellowish; not "killed"
7	7	3¼	Wholly reddish and yellowish;
8	7½	3¾	
9	11 to 12	4¾	Markedly obovate
10	14		Olla
11	9 to 9½	3¾	Slightly obovate

Acknowledgment is made to the following artists for the several drawings in Fig. 11: K. Abel, *1, 6, 11;* L. Kinkead, *2, 5;* M. Banks, *3, 7;* R. E. Sullivan, *4;* H. White, *8*; L. J. Savage, *9;* L. J. Suttle, *10*. Bowls *2, 5, 6,* and *8* are from the Roger B. Springer collection and *1, 3, 4, 7, 9,* and *11* are from the Harry W. Endner collection. The olla (*10*) is from the Springer collection.

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Western State College of Colorado
Gunnison, Colorado
November, 1939

PREHISTORIC EXCHANGE IN THE NORTHERN PERIPHERY OF THE SOUTHWEST

CARLING MALOUF

INTRODUCTION

IN GATHERING data for this paper it was discovered that publications containing information on the subject have described inadequately specimens found, especially in regard to the materials of which they are composed and their sources. For example, in describing arrowheads made of obsidian the sizes and shapes have been dealt with at great length, but the writers have neglected to state the qualities of the obsidian itself, viz., whether it was mottled, opaque, black, etc. Metates likewise have been described as being made of granite, limestone, sandstone, and lava, most writers deeming that information sufficient. Such a description is not enough, and ultimately it may lead to a false interpretation of the data gathered. A single example may suffice to show what may occur. In a very well known publication dealing with archaeology in the Northern Periphery, metates of granite have been reported from near Willard, Utah. There are no known deposits of granite within seventy-five miles of Willard as the mountains nearby consist mainly of gneisses and schists. A person can only postulate two tenets in regard to the metates; either they were made of granite and therefore constitute imported objects, or the writer must have erred in his description. It is difficult to imagine a person carrying a block of granite such long distances for domestic uses when there is an abundant supply of suitable raw materials closer at hand. Granite implements have also been reported from some sites near Nephi, Utah. The nearest source of raw materials of this sort would be in Little Cottonwood Canyon, near Salt Lake City, some 90 miles north of Nephi. More than likely, the material mentioned was a porphyry, a close relative of granite, which could easily have been obtained nearby on Mount Nebo. It is suggested that for the sake of future analyses greater care be taken in the description of the artifacts found.

PREHISTORIC EXCHANGE

In dealing with the problem of prehistoric exchange in the Northern Periphery, one must keep in mind, first, that this region has been occupied for at least 10,000 years by consecutive cultures each quite unlike the one preceding;[1] and second, that in addition to differences due

[1] Steward, 1938, p. 119.

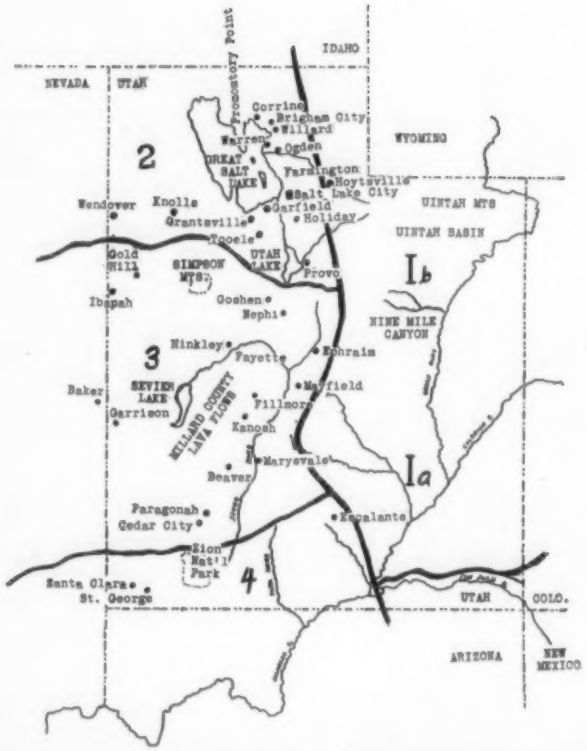

FIG. 12.—Principal archaeological localities in the Northern Periphery of the southwest.

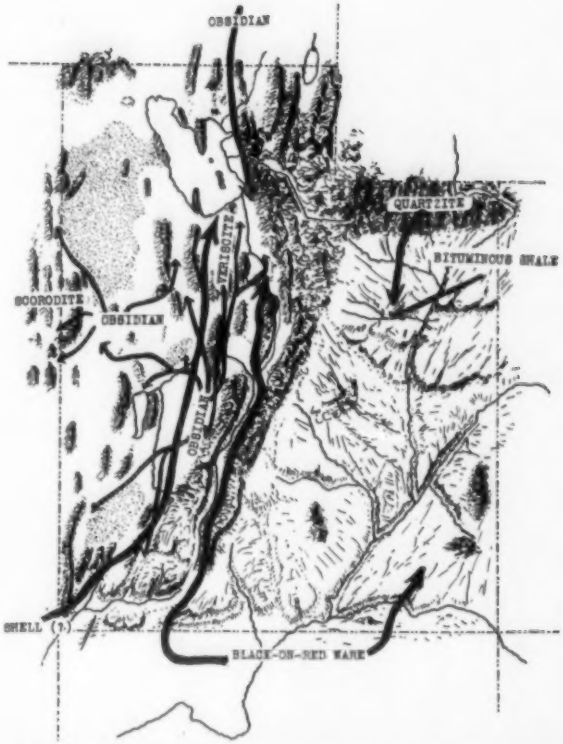

FIG. 13.—General trade routes in the Northern Periphery.

to historical development, many of these cultures varied from locality to locality because of different impositions of environment.[2] Early cultures within the area were considerably localized. It is doubtful whether the inhabitants of a particular locality were very familiar with an area very much larger than a few hundred square miles. In spite of contacts with immediate neighbors and the resultant infiltration of foreign goods by means of exchange, localizations continued to exist. Yet, an individual living in a particular locality may have had little knowledge of peoples living beyond a radius of, perhaps, a hundred miles.

Archaeologically the Northern Periphery may be divided into four parts.[3]

1a..... Lower Colorado Plateau
1b.....Upper Colorado Plateau
2 .....Great Salt Lake Area
3 .....Sevier Lake Area
4 .....Paria Plateau Area

The large majority of archaeological sites in the periphery are either Basket Maker or Puebloan in origin. However, in some areas, particularly in the Great Salt Lake region, numerous caves and open camp sites have yielded artifacts of some distinct nomadic cultures.[4]

EXCHANGE METHODS

Before an exchange of trade articles, or goods can take place the following conditions must be fulfilled:

1. There must be a desire on the part of an individual for an economic good.
2. He must possess something that would be acceptable to another person who has the good desired.
3. They both must be willing to give those goods in exchange.
4. A satisfactory agreement has to be made between the parties concerned in the transaction.

[2] These environments are, of course, cultural as well as physical, natural, etc.

[3] Adapted from Steward, 1933*b*, p. 4.

[4] Information dealing with the culture of the nomadic peoples has been gathered mostly by archaeological work being conducted by the University of Utah under Mr. Elmer R. Smith, but, as yet, results have not been published. Steward, 1938, contains some information, however. Harrington of the Southwest Museum and Robert Heizer of the University of California have also conducted researches on the western and northern fringes of the Northern Periphery but have not yet published any results of their findings.

FIG. 12.—Principal archaeological localities in the Northern Periphery of the southwest.

FIG. 13.—General trade routes in the Northern Periphery.

Obviously, these conditions may be elaborated upon. For example services may be substituted for goods, persons instead of only one person may be participants in the transaction, etc.

Exchanges were made between members within the group as well as with neighboring peoples. Those articles that had as their origin some place outside the Northern Periphery, e.g., shells originating in California, would necessarily have to be obtained through exchange with neighbors. That trading of goods took place by inter-tribal exchange rather than by the initiative of some individual, or individuals within the group is shown by the distinctiveness of the cultural remains in each of the archaeological areas of the periphery. In other words, these differences show a lack of direct contact with other peoples. Yet, the numerous trade pieces found in the area show that bartering and exchange was carried on quite extensively.

That trading did take place by inter-tribal exchange, rather than by individual initiative may be accounted for by the following reasons:

1. The presence of the individual would be required at home for food gathering and other economic pursuits.
2. Large numbers of persons, or indeed a few individuals would have to undergo dangers of resentment from the inhabitants of the territory into which they were intruding. The implication here is that a considerable number of persons would have been required to bring in the large number of trade pieces that have been found.

Artifacts found in the various archaeological sites throughout the Northern Periphery show that trade was carried on with other peoples of the Great Basin and Plateau areas and even with groups in California, Idaho, and Arizona.

TRADE COMMODITIES

Among the peoples of Utah, which incidentally, constitutes the largest part of the Northern Periphery, obsidian seems to have been the outstanding trade commodity. The many uses to which it could be adapted, its beauty, and the ease with which it could be transported and made into implements made it a highly valued commodity. Its principal sources seem to have been in Millard County, Utah, and in western Juab County, Utah, about ten miles southwest of the Simpson Mountains (see Fig. 13). Obsidian sources have also been reported from the Sevier River Valley in the vicinity of Marysvale, Utah, and from near Fayette, Utah, but the writer has been unable to confirm these reports. Obsidian outcroppings have been reported from Promontory Point, just north of the Great Salt Lake; however, it is possible that it

may have been confused with black chert, of which there is an abundance in the locality. Obsidian specimens have been reported from sites in the vicinity of the following present day towns. These are grouped according to the areas in which they are located. Unless otherwise noted these towns are in Utah.

GREAT SALT LAKE AREA (AREA 2)

Brigham City	Ogden	Holiday
Promontory Point	Kaysville	Garfield
Willard	Knolls	Grantsville
Warren	Farmington	Tooele
Corrine	Hoytsville	Wendover
Plain City (Near Warren)	Salt Lake City	

SEVIER LAKE AREA (AREA 3)

Ibapah	Kanosh	Beaver
Garrison	Provo	Fillmore
Goshen	Baker, Nevada	Sevier Lake
Mayfield	Nephi	Cedar City
Ephraim	Hinkley	Paragonah
Simpson Mountains	Marysvale	

PARIA PLATEAU AREA (AREA 4)

St. George	Santa Clara	Escalante

It may be noted that most of these localities, especially those in areas 2 and 3, are situated at the west base of the Wasatch Mountains which acted as a natural barrier between the peoples of the Great Basin and the peoples of the eastern Plateau areas.[5] These mountains divide the State of Utah north and south and no doubt played a great part in determining the routes of exchange and ultimately, routes of diffusion.

Apparently this commodity was taken from its original outcropping and was carried to the home of the toolmaker in a raw, or semi-raw form. Some preliminary work may have been attempted at the source, however. In several places, old workshops can be identified by numerous deposits of small obsidian chips that have been taken off in the process of chipping. As a rule, these workshops were located near the home of the person making the implements rather than by the source of supply although the implements may have been started there and finished at home in order that a man might be able to carry more. A typical example of a workshop may be found at the base of West Mountain

[5] The list was compiled mainly from unpublished works and from an examination of specimens in the Museum of Anthropology at the University of Utah as well as from published sources.

about four miles west of Fillmore, Utah. The workshops there are located near some "Kanosh type"[6] villages along Chalk Creek.

The objects into which obsidian was made were arrowpoints, knives, scrapers, drills, spearpoints, and in one instance, a small stone ball. (Found at Kanosh, Utah.)[7] Obsidian, especially the black opaque type, could possibly have been obtained from Idaho. Implements made from this type of obsidian are almost as frequent in the Great Salt Lake Area as the black, translucent, or even transparent Millard County type.

Obsidian was seldom used in the plateau area of eastern Utah, instead, chalcedonies and other sedimentary stones were used.

As far as exchange is concerned, there seems to have been a definite lack of it between the western half of the periphery and the eastern plateau areas. The flow of goods as well as the diffusion of many cultural traits seems to have been in a south-north direction rather than east and west. There are a few exceptions to this generalization however.

In northern Arizona during the Great Pueblo period a certain type of red pottery was made by the "Kayenta" peoples. It is characterized by a fine black design painted on a red field.[8] Pieces of this ware were found at Marysvale, Utah, by J. P. Gillin in 1937 and along the shores of Utah Lake, west of Provo, by J. H. Steward in 1932.

Quartzite was occasionally traded among the peoples of the plateau areas. One point, for example, was found by Gillin in Nine Mile Canyon, Utah.[9] No doubt, the material was obtained from the crest of the Uintah Mountains about 70 miles north.

Some bituminous shale, from the vicinity of Vernal, Utah, was found in Nine Mile Canyon by Gillin. It was shaped into a hoe-like object.

In western Utah there was no need to trade quartzite extensively, as it could be readily obtained in so many places throughout the Great Basin. It is especially abundant in the Great Salt Lake Area. Quartzite objects have been found in such places as Tooele, Uintah Basin, Nine Mile Canyon, and Plain City. An examination of specimens in the Museum of Anthropology at the University of Utah shows that peoples inhabiting Promontory Point, Grantsville, Deep Creek (near Ibapah), Wendover, Black Rock Caves along the south shore of the Great Salt Lake, and other parts of the area frequently used quartzite in the manufacture of points, tools and implements.

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[6] Steward, 1933*a*, p. 17. [7] Steward, 1936, p. 38.

[8] Apparently, these pieces are Tusayan Black-on-red. The true identity of these have not yet been published by the finders but undoubtedly they are trade pieces originating in Arizona. [9] Gillin, 1938, pp. 27 and 45.

Vesicular lava seems to have been traded to a limited degree. Metates were made of this material and in one instance, despite its great weight, it may have been imported from as far away as Millard County to Grantsville, in Tooele County.

Turquoise specimens have been reported in a few places in the Northern Periphery. It is very doubtful, however, that these actually are turquoise pieces.[10] Instead, it is more than likely that they were made of veriscite (Al Po_4 H_2O) of which there is an abundant supply in the south end of Tooele Valley, which is about 40 miles west of Salt Lake City. "Turquoise" has been reported from Grantsville, Kanosh, Sevier Lake, Plain City, Corrine, and Beaver. Veriscite may also be found in outcroppings at Lucin. Scorodite, another green mineral having the appearances of turquoise, may be found at Gold Hill, Utah. The principal source, however, seems to be those deposits in Tooele Valley.

Other minerals such as lead lumps, sulphur lumps, manganese, various paint pigments, salt, etc., seem to have been restricted in use to the localities in which they were found. Quartz crystals, despite their probable medicinal value, were seldom exchanged, due to their scarcity.

Shells constituted another important trade item. Judd has this to say about some shells found in the Big Mound at Paragonah, Utah:[11]

> That materials and artifacts prized by primitive peoples were frequently transported almost incredible distances is a fact well known to anthropologists. Several dozen beads made from Pacific coast shells (*Olivella biplicata*, Syb., and *Olivella dama*, Mawe) were found in the Big Mound and indicate that the difficulties of a foot journey across the Nevada and California deserts were not unsurmountable.

Judd also obtained a stone pipe made of agalamite, or possibly serpentine a material that is found in California but not in the Northern Periphery. It too was found in the Big Mound at Paragonah.

Abalone shells of Californian origin have been found at Kanosh, Black Rock Caves, and at Promontory Point. These constitute the only definite localities known to the author where *real* abalone artifacts have been found.

Although considerable care was taken in scrutinizing available literature and in examining numerous specimens in the Museum of Anthropology at the University of Utah, new evidence or discoveries that will undoubtedly come to light in the future is bound to modify much of its

[10] Professor Ray Marsell of the University of Utah Department of Geology states that he knows of no turquoise deposits in the State of Utah.

[11] Judd, 1919, p. 19.

value. It is sincerely hoped that workers in the field will recognize their obligation to those who want to generalize and give a qualitative as well as quantitative report of their findings.

I am indebted to the following members of the Faculty of the University of Utah whom I have consulted during the preparation of this paper; Hector Lee, Department of English, J. R. Mahoney, Department of Economics, Ray Marsell, Department of Geology, and Elmer R. Smith, Department of Anthropology and Sociology.

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University of Utah
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THE PETROGLYPHS OF SOUTHEASTERN ALASKA[1]

E. L. KEITHAHN

THE Tlingit Indians occupy all of Southeastern Alaska from Dixon's Entrance to Cape St. Elias except the southern half of Prince of Wales Island, which is Haida, and Annette Island, which is a Tsimshian reservation. Formerly all of this region was Tlingit.

Throughout this entire district and extending into the southern half of the Northwest Coast culture area, petroglyphs abound. These inscriptions in their simpler forms have much in common with those of widely separated regions of the earth. There are simple cups, rings, spirals, concentric circles, etc. But the typical petroglyphs of this area are as original as the well-known decorative art of the Northwest Coast and apparently closely affiliated with it in both form and meaning.

It is the goal of this article to present tangible evidence that these petroglyphs originated from (a) natural effects and (b) depressions worn in rock in the process of tool-making. Second, that they came to have a definite and important religious function and third, that the Northwest Coast decorative art had its origin in them.

The inscriptions under consideration are always found along the beaches, generally on smooth-surfaced boulders, or on the face of jutting country rock or bedrock uncovered and polished by wave action.

The boulders most often selected were large enough to withstand movement by heavy seas and in most instances of too great a weight be moved by man. However, exceptions occur where the general run of boulders in a given spot is small. Numbers of these have lately been carried away by plunderers or disturbed in their original position.

The most primitive type of petroglyphs in this area, such as simple cup sculptures and V-shaped grooves (Fig. 14, *1*) occur in soft sedimentary rocks such as sandstone. At Hydaburg creek on the West Coast of Prince of Wales island these cups occur on boulders in the stream bed and near the mouth, while the stream-exposed bedrock is almost honey-combed with natural potholes.

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[1] This paper was prepared as part of a research project undertaken under the direction of the Dept. of Anthropology, University of Washington, during the summer of 1939, and under the personal supervision of Dr. E. A. Hoebel of New York University.

The observations were made between the years 1928–39 during which the present writer was employed in Southeastern Alaska by the Office of Indian Affairs. At present he is teaching classes in Native Craft, Northwest Coast Culture, and Northwest Coast Decorative Art at Wrangell Institute, a Federal Boarding School for Indians.

Although the grooves have every appearance of having been made by early craftsmen who were engaged in shaping primitive barbs, weapons or tools, there is no reasonable accounting for the cup sculptures unless they were inspired by the nearby potholes. All rivers in this coastal area are necessarily swift due to the steep hinterland and potholes are common to all streams with exposed bedrock in the stream bed.

Many of these places where a grade of fast-cutting rock was exposed were known to the Tlingits as "grindstone creeks." They went to them in the remote past to grind their adz bits and other stone implements and weapons. One type of groove (Fig. 14, *1e*) about three inches in length and a quarter-inch wide at the top is quite numerous (Plate XI, *c*). Their position as well as their shape and character indicates that they were made in the process of sharpening the bone barbs of wooden halibut hooks common throughout the area.

In shaping and sharpening these primitive tools and weapons by means of friction against a suitable grinding rock, the grooves, scallops (Fig. 14, *1b*) and cups formed incidental to this labor are identical to those employed in the early face and animal forms (Fig. 14, *3*). It seems likely that the art of petroglyph-making was inspired in part at least by the marks left by still earlier workmen who were concerned only in making a tool and took no notice at the time, of the marks their labors left on the grindstone rocks.

The true petroglyphs resulted when the cup was encircled by a ring or a spiral for these forms could not have resulted from tool-making. These forms (Fig. 14, *2*) seem to have been the earliest art forms attempted. Those high on the sloping beach line are often an inch in depth while those so low as to be covered by every high tide are often worn so shallow as to be barely visible to the eye, even when incised in the hardest granite. These have been produced by a rubbing action, aided perhaps by the use of an abrasive such as sand. They differ from the later more complex forms in that the latter were made by pecking the outline with a sharp instrument.

This change in technique was probably due to the invention of a use for petroglyphic art which gave rise to a strong demand for these inscriptions even in regions where rock which could be cut by an abrasive was not available.

With the new method, any rock that was large enough could serve the purpose, hence we find the later type of inscriptions pecked on such glassy stones as granite, basalt and lava. Even stone with irregular surfaces could now be utilized. These hard, glassy rocks were useless in

sharpening tools and do not show any of the individual marks ascribed to the toolmaker. Nor do the basalts and lavas display any petroglyphs made by abrasives. All of the basalt, lava and slate glyphs observed in the Wrangell district were found to have been made by the impact of a hard, pointed instrument.

The face form in its most primitive state consists of three rings, two to form the eyes and one beneath to represent the mouth (Fig. 14, *3a*). Arrangements like this could occur in nature where three potholes happened to have that position, their discoverer placing more importance on the rim of the hole than on the cup itself. This is not unusual, for in the glyphs themselves, the artists did not consider all of them as line drawings, but some as figures in low relief (Fig. 14, *4f*).

Natural forms in rock having the appearance of birds, animals, fish or people were noted by the natives who ascribed to them a supernatural significance. If the likeness could be improved by the addition of a sculptured line or two or a touch of red paint it was added. Small, easily-portable stones of this nature became charms and talismans, while large, geologic formations took their place in the lore of the region and have been perpetuated in such local names as "Halibut Nose", "Raven's Woodpile," etc. Wedge-shaped rocks that suggested the muzzle of an animal are occasionally found on which some early artist increased the likeness by the addition of rings, one on each side to represent eyes, and a groove to represent the mouth.

The next stage in face-making was in using concentric circles for the eyes and a single circle for the mouth which in most examples is oval in shape (Fig. 14, *3b*). The addition of a smaller circle to signify the nose and rudimentary ears (Fig. 14, *3c*) suggests that an animal is intended. This figure is generally interpreted by the natives as a brown bear.

Fig. 14, *3d* is a face form having its origin in two cup sculptures encircled by concentric rings. The groove where the outer circles would touch has been omitted, while the rings are joined by another line at the bottom to form the mouth. Here the ears have been added in the form of two additional rings somewhat irregular in shape.

Fig. 14, *3a*, *b* were made by the abrasive method; Fig. 14, *3c*, *d*, by pecking on basalt. Fig. 14, *3e* is a profile face similar in style to those seen in modern Northwest Coast decorative art, also made by pecking.

A transitional result of the successive copying of a series of concentric circles is the spiral. In fact some resemble each other so closely that one must trace the line out carefully to determine whether it is a ring or a spiral or a combination of both, which, incidentally, it frequently is.

FIG. 14.—*1 a, b, e, f,* marks made in grinding tools, *c, d,* cup sculpture; *2,* rings and spirals; *3,* evolution of the face form (all from Wrangell except *c,* from Hetta Inlet); *4 a,* spiral terminating in serpent-like head, *b, c,* concentric rings as head and body, with and without mandibles, *d, e,* ring and cup and ring with radii; *f,* unusual in that high-lighted portions are in relief (*a–e,* Wrangell, *f* Hetta Inlet); *5,* probably a wood worm (one mile south of Wrangell); *6,* bird forms (all from Wrangell except *b,* from Hetta Inlet.)

(See Fig. 14, *4a*.) In either case, no spirals or concentric circles were observed wherein more than four depressions or turns were made, counting the central cup as one.

Fig. 14, *4c* illustrates an attempt to form a head and body from two such concentric circle figures. In Fig. 14, *4b*, by the addition of mandibles, a bird-like head is evolved. Fig. 14, *4a* shows what appears to be a rudimentary head of a serpent.

In Fig. 14, *5* a complete animal form has been composed entirely of simple cup sculptures and rings. Although this sculpture is unusual for this area, its segmented body suggests an early attempt to portray the woodworm which is important in coastal mythology. The double body suggests the modern Northwest Coast decorative art trait wherein a single head is placed over a body that has been split and laid open to form a balanced design (Plate XI, *e*).

The bird forms in Fig. 14, *6* are composed of simple cups, grooves and concentric circles. In Fig. 14, *6e*, the eye form occupies the entire profile of the face in the same manner as it later dominated the face in Northwest Coast decorative art. In Fig. 14, *6b* the same form, that is, cup and concentric circles or "eye" depicts the hip joint of a perching bird. This interchangeability of the symbol for "eye" and "joint" is also the most original trait of all Northwest Coast art. (See also Figs. 15*a* and 16*a*.) That it had its inception in the petroglyphs of the area is obvious.

Fig. 15*b* is an early petroglyphic concept of a sea monster known to Tlingit, Haida and Kwakiutl alike. It is generally described as having the head and tail of a wolf, and body of a killer-whale. This glyph, on hard granite, was made by the abrasive method. Waves have removed some of the lines and the rest are barely visible. It illustrates the use of the spiral as a decorative effect, the concentric circle and cup "eye" and the conventional wolf head as seen in modern Tlingit and Haida paintings and carvings (Plate XI, *d*).

The spiral, which alone and in animal forms, is one of the commonest of the glyphs is also seen in the Northwest Coast decorative art as the proboscis of the butterfly and dragonfly and in various nostril forms in Haida and Tlingit designs.

Each Indian clan of the Northwest Coast had at least two residential seats. There was the country place owned by the clan where fish were caught and dried, furs were trapped, berries, bark and roots were gathered and later, gardens were planted. This ground (Chinook "Ilahee") was occupied from early spring until late fall. The winter season was spent in a convenient gathering place or village which made social

life possible and which provided protection from invaders as well. Petroglyphs are not necessarily found at these village sites but near the mouths of salmon streams and were undoubtedly made by those who claimed the stream. For example the village of Sukkwan, an ancient site of a Tlingit village, taken over by Haidas and since abandoned, has no petroglyphs on its beaches, Neither has it a salmon stream, yet the

FIG. 15.—*a*. Primitive animal form using concentric circles and parallel lines. Attempt at realism in limbs. Areas washed out by tide indicated. (Hetta Inlet.)

b. Animal form using concentric circles, cup sculptures and spirals. Compare with Plate XId Haida "Wasgo" and Kwakiutl "Lightning Snake." (Hetta Inlet.)

beach was so covered with boulders that they were piled into rows extending from the high tide line to low water to make room for a landing place for canoes. A scant half-mile away, across the channel at Hydaburg Creek (Hiktah Creek), a good salmon stream, and the adjacent beach are numerous petroglyphs of all descriptions. There are none at Howkan and Klinkwan, two other villages taken over by the Haidas, yet at the mouths of all major salmon streams on the West Coast of Prince of Wales Island petroglyphs abound.

Sockeye salmon streams seem to have been favored for this type of art, yet any salmon stream claimed in the past by certain clans will have petroglyphs in the immediate neighborhood, generally on the saltwater beach on the side from which the salmon entered. Large streams such as the Stikine River or a famous salmon stream such as Anan Creek in the Wrangell district have more glyphs than streams in which the salmon run was small. A small stream near Wrangell, barren of salmon at present, boasts many petroglyphs at its mouth. The oldest natives remember when it was an excellent salmon stream.

These petroglyphs will almost unvariably be found facing the sea. One walking on the beach at the high tide line, looking seaward will seldom find one unless the face of the boulder on which it is inscribed is nearly horizontal. They may readily be seen, however, if one walks on the seaward side of the boulders and looks landward. It is obvious they were meant to be seen from the sea. Either they were meant to be seen or read by men passing in canoes or by sea creatures. In the former case their function would be that of signs of ownership to warn other tribes or clans that this particular stream was private property and to "keep off." This function is extremely unlikely, for in fishing season the owners would be there personally to assert their prerogatives and no sign would be necessary. At any other time such a notice would be superfluous. Furthermore, weirs and other fish traps of stone bore no petroglyphic insignia or mark to designate ownership, which indicates they were not commonly used as signs of ownership.

If they were meant to be seen by sea creatures, their location at the entrance to salmon streams suggests they were meant to be seen by salmon. Their relation to the salmon run then becomes apparent.

Like other animists, the natives of the Northwest Coast believed animals could influence their lives either here or hereafter. They believed salmon were people and lived "in their own country" in community houses in villages under the sea. They were ruled by a "chief" who each spring dispatched them as "fish" to the rivers where they became the food of man. When eaten by man they came back to life "in their own country."

With this belief that the "Salmon Chief" could send his "people" wherever he willed, it is reasonable that these primitive fisher folk would take some steps to insure the run of salmon in their particular streams or to endeavor to increase it. Through petroglyphs they could supplicate or placate the Salmon Chief or "Leader" by displaying likenesses or symbols of beings known or at least believed to be in especial favor.

Likewise they could make known their location on a given stream by the simple expedient of displaying their tribal "crests."

One face (Plate XI, *b*), graven on a boulder near Hydaburg Creek was recognized by an informant as a duplicate of one at Karta Bay which is supposed to represent "Shin-quo-klah" or "Mouldy End," an important character in Northwest Coast mythology. Other duplicates of this glyph were observed on the beach at Wrangell (Fig. 14, *3e*). Shinquoklah was a high caste Tlingit boy who gained favor with the Salmon Chief by feeding (to a slave) dried salmon that had been kept two years and was mouldy, thereby releasing the soul of its owner "in his own country."[2]

The influence of deities and sub-deities such as "Raven" (Fig. 14, *6a*, *c*, *d*) Killer-Whale (Fig. 16*b*) and Sea-Monsters (Figs. 15*a*, *b* and 16*a*) was sought, for their images, too, were graven on boulders at the stream entrances. Even the spiral might have become the symbol of the legendary whirlpool in which the corpse of Shinquoklah spun four times before sinking, and where it is believed his tom-tom may still be heard when there is to be a good run of salmon.

While most of the Indians now living in the region deny any knowledge of the meaning of the petroglyphs and even deny that their forebears made them, a few seem to have some knowledge of their former import. One informant said they were made to "cause rain." In a country naturally drenched with rain and without agriculture, rain is important only in that it makes it possible for the salmon to ascend the streams. Not having the equipment to catch salmon in great quantities until they ascended the streams, it is quite reasonable to think the fishermen took steps at rain-making.

There is also the legend of a Tlingit chief who lived at Port Houghton and had many slaves. To keep them out of mischief, he is said to have sent them down to the beach at times, to "carve the rocks." It is not related what other purpose the carving was to serve but it is important in that it is one instance in which Tlingits admit petroglyphs were their own handiwork, or at least, the work of their slaves.

In any village there are men who will not hesitate to name the animal or being intended in a petroglyph. This is not likely to be due to any knowledge of petroglyph-making but rather to a recognition of similar-

[2] Swanton, J. R., *Tlingit Myths and Texts*, Bureau of American Ethnology, Bulletin 39, Washington, 1909, pp. 301, 311, gives two Tlingit versions of the story of "Mouldy-End." See also story of "Sinagula," p. 243, and "Mouldy Forehead," p. 197, in Swanton, J. R., *The Haida of Queen Charlotte Island*, Memoir, American Museum of Natural History, Anthropology, Vol. VIII, Jesup North Pacific Expedition, Vol. V, Pt. I, 1905.

ities between the art style of these engravings and their own decorative art.

The sea-monster portrayed in Fig. 15 *b* compares to the Haida "Wasgo" which was part killer-whale and part wolf. The dorsal fin which is

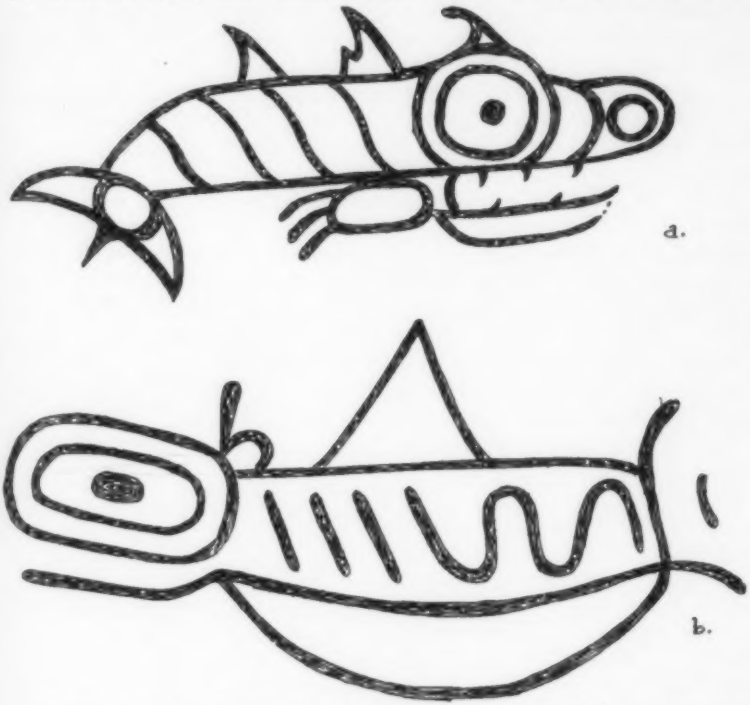


FIG. 16.—*a*. Animal form illustrating use of cup, rings, concentric rings and reverse-curve rib symbol. Beginnings of "eye" form to signify joints. Probably the "Sea-Grisly." (Wrangell.)

b. Early attempt to portray the killer-whale. Cup and rings elongated. Blowhole and prominent dorsal fin recognition features as in present decorative art. (Wrangell.)

the recognition feature of the killer-whale is present as are the long muzzle, the elevated nose, prominent teeth and long tail of the wolf, still the symbols of the wolf in the Northwest Coast decorative art (Plate XI, *d*).

The killer-whale (Fig. 16 *b*) is easily recognized by the enlarged dorsal fin and the blowhole, both important features of this creature in the decorative art.

In Fig. 16 *a* an early representation of the "sea-grisly," are seen the beginnings of the use of the eye-form at both tail and fin joints, a feature which also characterizes the decorative art. The bear's head and double dorsal fin are still used to indicate a sea-monster. In the same figure are found the accepted rib symbol, a series of parallel reverse curves also a prominent feature of Northwest Coast decorative art (Plate XI, *e*).

Another more general similarity is in the almost complete lack of angles or angular forms. The primitive artist as well as the later decorative artists avoided straight lines and angles wherever possible.

In totem pole carving, the artist could illustrate a story easily by carving memory devices, one beneath the other, in the order in which they were presented in the story. The artist who attempted to tell a story on boulders often found it necessary to continue his story on several adjacent boulders. At Wrangell, several boulders collectively illustrate the story of how "Raven" caught a spring salmon through the use of a stone with a face on it and which he gave magical power by sprinkling it with eagle down.[3] A stone bearing such a face is to be seen on the beach at Wrangell (Plate XI, *a*). Nearby are sculptures of the birds that figured in the story, among them, bluejay (Fig. 14, *6e*) who tied up his hair in mourning after having been cheated out of his share. The graven face of the Raven's stone with which he hoodwinked the salmon was no doubt a petroglyph itself. The one which illustrates the story is similar to that painted on the "Snail House" at Hoonah to illustrate the same story.

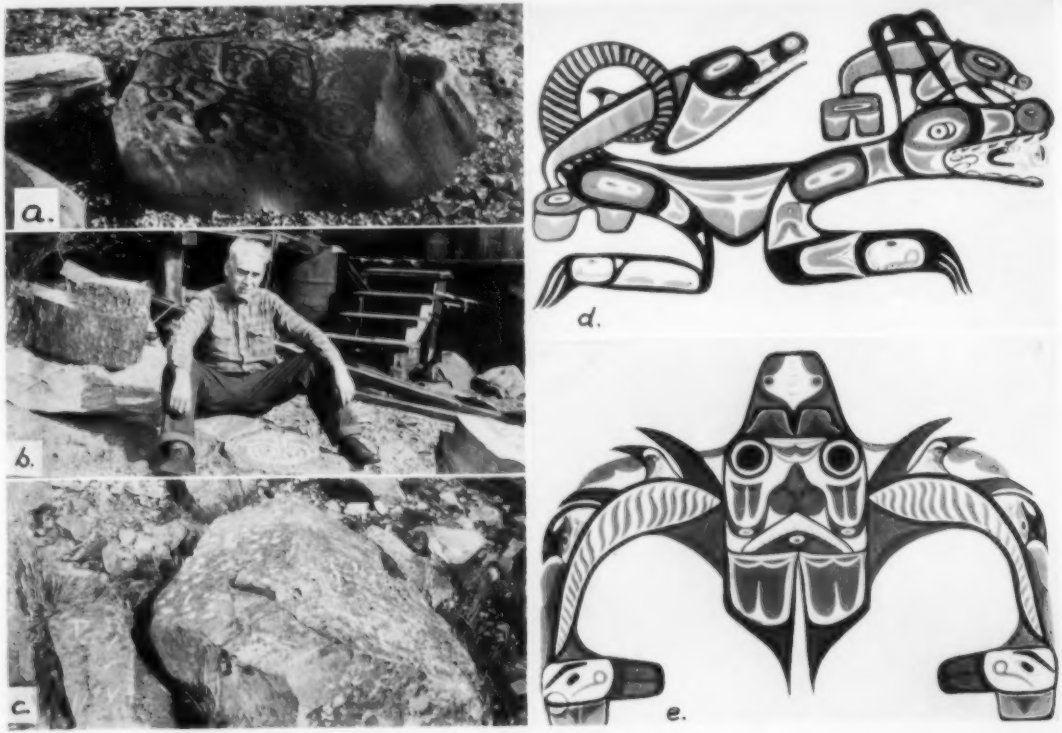
Considerable further investigation will be necessary before the whole truth can be established regarding these remarkable inscriptions. Only a small portion of those reported have been photographed, fewer studied. Present evidence, however, points to the fact that the Northwest Coast petroglyphs were made by the forebears of the present native inhabitants of the region, that they originated here, that they came to have a religious significance relating to the food supply and that out of them was evolved the present striking Northwest Coast decorative art.[4]

Wrangell Institute
Wrangell, Alaska
January, 1940

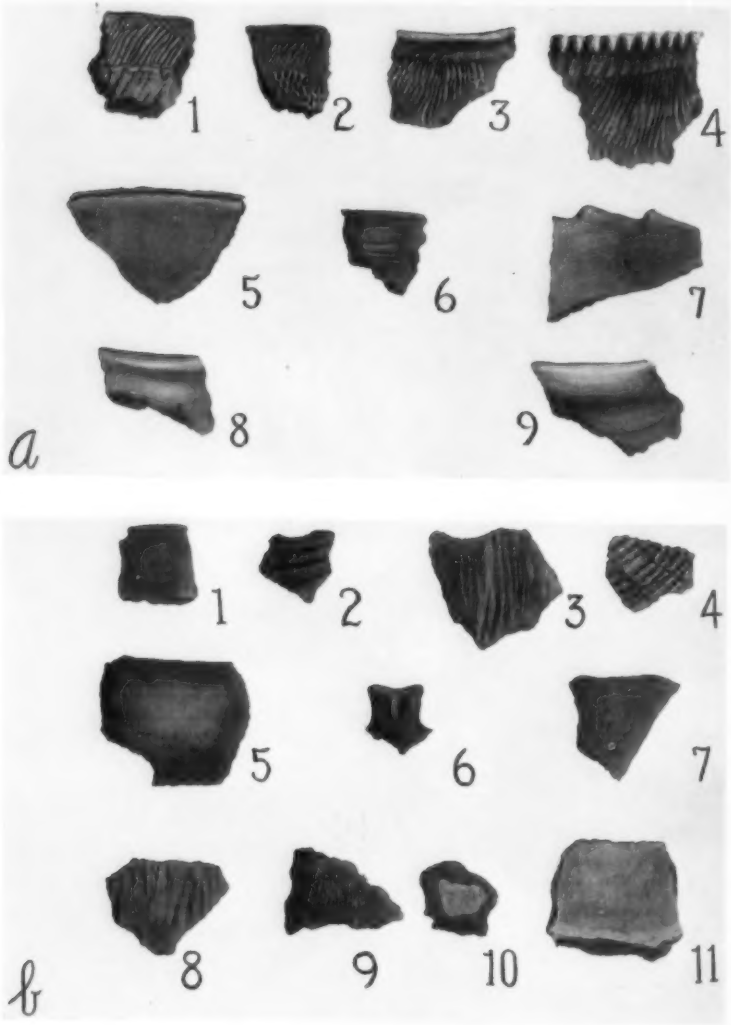
[3] Swanton, *Tlingit Texts*, p. 5.

[4] Since this paper was written, considerable evidence has appeared to suggest that these glyphs were always placed in such a way that each tide, in submerging these graven supplications, would dispatch the prayer anew, after the manner of prayer wheels, etc. *E. L. K.*

[SCHABEN] PLATE XI
AMERICAN ANTIQUITY, VOL. VI



a. Petroglyphs on boulder at Wrangell; upper figure illustrates face such as "Raven" sprinkled with eagle down to give it supernatural power. *b*. Petroglyph on beach at Hydaburg depicting "Shin-quo-klah." *c*. Cups and grooves at Hydaburg. *d*. Sea-monster with wolf's head and tail carrying whales; "Haida." *e*. Dissected dogfish with head in center; "Haida."



a—Sherds from the Barton Ranch.
b—Sherds from the Norris Plantation.

POSSIBLE ANTECEDENTS OF THE MIDDLE MISSISSIPPIAN CERAMIC COMPLEX IN NORTHEASTERN ARKANSAS[1]

S. C. Dellinger and S. D. Dickinson

THE ceramic complex of the Middle Mississippian phase in northeast Arkansas is comparatively well known, though its origin and relationships are still obscure. Holmes and Moore described and classified this ware, but were unable to place it chronologically. Vaillant later pointed out certain striking analogies between the vessel forms from this area and those from Mexico, Central and South America, but his study was made from the standpoint of horizontal distribution.

Although the examples which he illustrates are quite suggestive of a Latin American origin, Vaillant's hypothesis is most strongly supported by specific types which have a composite silhouette. It is true that these forms are characteristic of the Arkansas Middle Mississippian complex; but they are complemented by a great number of simple vessels which are either plain or have elementary intaglio and relief designs. The complex shapes that are most closely analogous to the Mexican ones usually have relief decoration that is an integral part of the vessel, as in the case of zoömorphic forms executed in the round, or is a pure decorative feature that is sufficiently simple to have been developed independently through a conventionalization of handles and lugs.

Vaillant lists the following traits as being suggestive of influence from Latin America:[2]

1. Tripod support of vessels.
2. Funnel neck jars.
3. Double bodied jars.
4. Rarely the shoe form of vessel.
5. The high and low forms of annular base for vessels.
6. Spout handles.
7. The composite silhouette form of bowl.
8. Vessels with spouts, plain and in effigy.
9. Vessels modeled in the effigy of animals or humans.
10. Vessels in the form of a human head.
11. Vessels with the head or features attached.

In order to ascertain the frequency of the aforementioned traits we

[1] Research paper Number 663, Journal Series of the University of Arkansas.
[2] Vaillant, August, 1932, p. 12.

have made a statistical study of forms in a typical Middle Mississippian site. At the Hazel Place, 1 mile northeast of Marked Tree, Poinsett Co., Arkansas 575 funerary vessels were obtained. Of these there were:

Plain bowls, truncated conoidal and semiglobular	30.00%
Plain bowls having annular base	.17%
Painted bowls, truncated conoidal and semiglobular	1.04%
Bowls of simple silhouette having intaglio decoration	.87%
Effigy bowls	7.82%
Plain bottles	28.00%
Tripod bottles	1.04%
Bottles with annular base	.17%
Bottles having intaglio decoration	.70%
Painted bottles	4.00%
Effigy bottles	1.40%
Plain pots or ollas[3]	19.10%
Pots having intaglio and simple relief decoration	4.50%

As this table shows, Mexican and Central American traits are in the minority. However, this may not preclude the influence that Vaillant points out, but would strongly suggest a more indigenous base for the late prehistoric ceramics of this area.

In order to determine with more accuracy the basic components of the Middle Mississippian phase, the University of Arkansas Museum began work in the basin of the St. Francis and Mississippi rivers in the northeastern part of the state in 1932. In this connection, we wish to express our appreciation to the Carnegie Corporation of New York for supplying the funds which made this research possible. We are indebted to Miss Hilma Hart for the drawings used in this report.

First, it was deemed necessary to excavate house sites and cemeteries that were typically Mid-Mississippian so a broader view of the general culture could be obtained. Borrowing an idea from Southwestern archaeological technique, we also gathered representative sherd collections from each site. Though our first studies were restricted to the funerary ceramics, as they gave a more complete picture of types with their respective distribution and frequency, the potsherds have not been neglected. We present in this paper some of the results of our studies of the latter collections. Although Middle Mississippian material was obtained at each of the sites considered in the present treatise, that pottery is not

[3] Olla as defined by Cole and Deuel, 1937, p. 285.

discussed unless it bears some relation to the other complexes represented there.

BARTON RANCH, CRITTENDEN COUNTY

The site is north of Gilmore. Though both Coles Creek and Deasonville complexes occurred here, the latter predominates.

Sherds of the Deasonville Complex

The Deasonville Cord Marked paste is quite coarse in texture, and was tempered with grit. The clay of which these specimens is made appears to have been silicious before the addition of the aplastic. In color, the past core varies from deep gull gray to hair brown. The exterior coloring of the potsherds is either the same as that of the core or is avellaneous. In all cases the walls were poorly smoothed. In fact, marks of the instrument used in finishing the surfaces are discernible on the interior walls.

The following rim types are represented:

1. Straight exterior with a squared rim lip which has a series of diagonal incisions (Pl. XII, *a*, No. 1). The interior bulges approximately 3 cm. below the lip. The cord impressions were executed diagonally, and are crossed by a horizontal line about 2.5 cm. below the lip. Apparently, this type belongs to a rectangular shaped vessel.

2. Rims which have a slight outward flare and ovate lips: Like the aforementioned type, the interior wall of these bulges a little and then decreases before its juncture with the lip. These sherds seem to have been parts of wide-mouthed, globular-bodied pots related to the olla form, but lacking a well defined shoulder. The cord marking is both diagonal and vertical. One sherd has a cord design interrupted by a plain, horizontal band (Pl. XII, *a*, No. 2). A potsherd of somewhat similar form occurred at the Alma Brown Plantation in the Bayou Macon area of southeast Arkansas.[4]

3. Flared rims to which has been added a strap of clay on the exterior wall: (Pl. XII, *a*, Nos. 3 & 4) This strap occurs slightly above the inflection. The rim lips are flat and pointed. Marginal crenulations, resembling the notching on several specimens from the Brown Plantation,[5] occurs on 2 of these potsherds. The cord markings either extend vertically across both strap and body or else are confined to the former. Webb illustrates notched rims of cord marked vessels from the C. J. Walters' Farm, Tennessee.[6]

[4] Lemley and Dickinson, 1937, p. 35, Plate 4.

[5] *Op. cit.*, p. 40.

[6] Webb, 1938, Plate 76.

Sherds of the Coles Creek Complex

A rim, of what appears to have been a truncated conoidal bowl, has a slight outward curvature of its lip (Pl. XII, *a*, No. 5). The deeply incised line in this lip, the silicious and carbonized tempering, and its hardness of 2 relate it to Coles Creek Plain ware. The core of the paste is deep gull gray, whereas its exterior color is avellaneous. Though this type is represented in collections from the Bayou Macon region, the Kirkham, and Crenshaw places in southwestern Arkansas, it is more porous than any heretofore observed by us. It seems noteworthy that punctations in the rim are absent. This feature was found only on a limited number of specimens from the last named site.

One Coles Creek Incised sherd occurred (Pl. XII *a*, No. 6). Presumably it belonged to a bowl or else to a beaker. The vertical rim, which has a flat lip, is of compact but lumpy paste. The core is deep gull gray while the exterior surfaces are avellaneous. Grit was used for tempering. Both interior and exterior walls were smoothed, but the decoration, which consists of horizontal lines incised between the rim lip and wide overhanging line, was crudely done.

Unclassified Potsherds

A sherd of a bowl with scalloped, vertical rim (Pl. XII *a*, No. 7) and one belonging to a globular bodied olla (Pl. XII *a*, No. 8) are of vinaceous buff ware. Both are grit tempered and have a hardness of 3. The thickness of the walls is 8 mm. and 9 mm. Each specimen has been fairly well finished, and bears no indication of smudging or differential firing. As has already been noted, the olla is quite common in the Mid-Mississippian ware of this region, but scalloped bowls are infrequently found here. However, the latter are more common in the Caddoan ware of the Upper Ouachita.

A flared rim of a bowl of smoke gray colored ware (Pl. XII, *a*, No. 9) is reminiscent of Tunican pottery from southeastern Arkansas. However, the paste of this specimen is more compact. Charcoal particles are also discernible. The rim of this sherd, which is 6 mm. thick, has an ovate lip. Another sherd obviously related to the same complex, has notching on the interior margin of its lip.

NORRIS PLANTATION, PIONSETT COUNTY

On this plantation, just east of the town of Hydrick, there are a campsite and mound, both of which have aboriginal debris on the surface. These complexes are represented in the surface collection:

Tunican Complex

This is the predominating type. The potsherds (Pl. XII *b*, No. 1) are pale and dark olive gray in color; and were smudged on interior and exterior surfaces. Their paste, which is porous, appears to have been tempered with some vegetal material which was charred during the firing of the vessels. The hardness ranges from 2.5 to 3. Only one specimen was decorated (Pl. XII *b*, No. 2). The design, consisting of parallel lines, was incised with a pointed instrument.

Deasonville Complex

Only body sherds of this complex occurred (Pl. XII *b*, No. 3). The lilac gray and vinaceous buff colored paste, tempered with grit has a hardness of 3. Thickness of the walls ranges from 7 mm. to 1 cm. On these specimens the cord markings, which were arranged in vertical and cross-hatched fashion, are finer than any observed at other sites.

A portion of a baked clay tablet was also obtained here (Pl. XII *b*, No. 4). One side is flat, whereas the other is convex. Its maximum thickness is 1.7 cm.; and its hardness, 2. No tempering is apparent in the compact, salmon buff colored paste. Both sides had been impressed with a textile, possibly a net, which had been arranged diagonally to the margins of the tablet. Though the decoration is different, this tablet is similar to two reported from the Bayou Macon area.[7] Possibly this specimen, like those from southeast Arkansas and the ones found by de Booy in Santo Domingo,[8] were used as pottery stamps.

The mound at this prehistoric village was sixteen feet high and eighty-eight feet in diameter. A trench cut from the surface to the mound base revealed the following stratification, which is presented according to the order of its exposure:

A. Stratum of mixed soil, six feet thick.

B. Seven feet and eight inches of brown and gray clay which had been deposited in large lump.

C. Three inches of black soil.

D. A layer of lumps of gray and brown clay, one foot and eleven inches in thickness.

E. Four inches of black soil.

Although flint chips were abundant throughout the excavation, few animal bones and potsherds were encountered. The last, however, pre-

[7] Lemley and Dickinson, 1937, Plate 6, Figs. 1 and 2.

[8] de Booy, 1915, pp. 95–97.

sent considerable variation. Unfortunately, their limited number can only be used in suggesting a possible sequence of ceramic types here, not in establishing one.

Fragments of a semiglobular bowl, (Pl. XII *b*, Nos. 5, 6) having the head of a bat or an owl on one side, were obtained from the uppermost stratum. This vessel had been crushed too badly to be restored. Consequently, the original dimensions are not given. The walls, which are 4 mm. thick, have a hardness of 2. Its slightly vesicular paste seems to have been tempered either with charcoal, or else with some vegetal matter which was charred during the process of firing. The vessel surfaces are buffy brown in color, and the paste core, olive gray. Exterior and interior walls have been smudged. From the standpoint of fabric, this bowl is closely related to certain Tunican vessels[9] from Mound "B," Medley Place, on the Bayou Macon, although the treatment of the head is suggestive of effigies of both Middle Mississippian and Arkansas River wares.

Three other sherds (Pl. XII *b*, No. 7)—parts of the base of a bowl—from this stratum are also related to the Tunican complex. The porous paste is pale Medici blue with a wash of vinaceous buff colored clay. Occasional particles of charcoal appear in the paste core. The hardness and thickness of these sherds are the same as those of the effigy bowl.

No potsherds were obtained from Layer *B*.

Stratum *C* yielded 3 Deasonville sherds (Pl. XII *b*, Nos. 8, 9), the exterior surfaces of which have vertical cord markings. These specimens are 8 and 9 mm. thick, and have a hardness of 3. Apparently, grit was used as the aplastic. Pale smoke gray and vinaceous-buff are their colors.

In Stratum *D* a small potsherd (Pl. XII *b*, No. 10), 9 mm. thick, was encountered. Like the above mentioned pieces, it had a hardness of 3. Its walls, which were avellaneous in color, had been smoothed. The paste core is light violet gray. Though the tempering could not be determined with any degree of precision, it seemed to be silica. No attempt was made to determine the complex to which it belonged, for the sherd is not sufficiently large.

The only potsherd occurring in Stratum *E* was a flared rim (Pl. XII *b*, No. 10), having an ovate lip with notching on its interior margin. Pale smoke gray was the color of the paste core; and pinkish buff, the color of the walls. The paste is slightly vesicular. Although no particles

[9] Lemley and Dickinson, 1937, Plate 2, Nos. 6 and 8, p. 21.

of limestone or shell were discernible under a binocular microscope, the sherd effloresced after an application of concentrated hydrochloric acid. The sherd attains a maximum thickness of 9 mm. at a point 1 cm. below the lip, and decreases toward the point of juncture with the body of the original vessel. Its hardness is 2. We hesitate to assign this potsherd to any ceramic complex. As is well known, flared rims are common in Middle Mississippian ware, but, insofar as we have observed, they were not notched on the interior margin of the lip. Furthermore, the color is too light, and the composition too different for it to be put in the Middle Mississippian group.

BELL PLANTATION, MISSISSIPPI COUNTY

Southeast of Bassett is this plantation from which were obtained potsherds of the following complexes:

Coles Creek Complex

Only one specimen (Pl. XIII *a*, No. 1) could be identified as Coles Creek ware. The specimen belonging to this category is a straight rim, the lip of which is flat. A design composed of large crosshatching corresponds to Ford's Type 71: 21.[10] The incised lines, which are narrow and sharply defined, appear to have been made while the clay was rather damp. Although the paste core is pale smoke gray, both exterior and interior surfaces have a reddish tinge. Like Ford's type, this sherd has shell tempering. However, the aplastic is so fine that it is hardly noticeable.

Deasonville Complex

With the exception of a rim (Pl. XIII *a*, No. 2) with additional exterior strap and a rectangular base (Pl. XIII *a*, No. 3), all of the Deasonville Cord Marked pieces are body sherds (Pl. XIII *a*, No. 4). Their thickness ranges from 9 mm. to 1.7 cm. The color, likewise, varies little, being pinkish buff or pale smoke gray. Smudging is noticeable on the interior surface of some of the potsherds. Grit tempering was employed in all cases. The cord markings were made both regularly and at random. One specimen (Pl. XIII *a*, No. 5) has not only the usual impressions, but also a series of punctations made with a small cane. A central core remains in each punctate. This decorative technique is somewhat similar to one observed at an Arkansas River valley site yielding Deasonville ware.

[10] Ford, 1936, p. 187.

Among the undecorated potsherds 2 rim types are represented:

1. Rims of truncated concoidal bowls (Pl. XIII *a*, Nos. 6, 7), having either squared or ovate lips. In the latter case the interior wall decreases in thickness as it approaches the lip.

2. Slightly incurving or outflaring rims of hemispherical bowls with flattened-ovate lips (Pl. XIII *a*, No. 8). Although all sherds of this type were tempered with grit, the texture of one is fine and compact in contrast to the usual coarse fabric.

Body sherds, which have no decoration, include specimens which can clearly be classified as Deasonville (Pl. XIII *a*, No. 9), and some which are questionable. Eight of the latter, both from standpoints of composition and treatment, are similar to a shallow bowl[11] from the Brown Plantation in southeast Arkansas, and a square bottomed vessel[12] found near the Little Missouri River in the southwestern part of the state. The paste of these grit tempered sherds is coarse, and mouse gray in color. Their hardness is 3; and the walls are 7 mm. to 1 cm. thick.

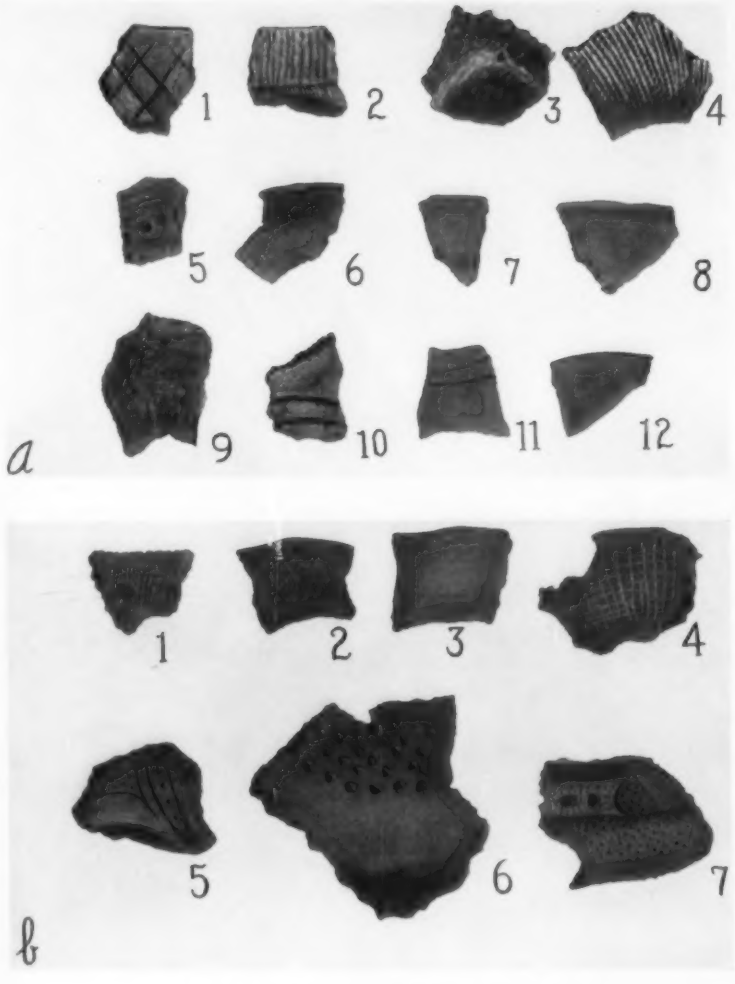
Tunica Complex

This ware is represented by 2 body sherds (Pl. XIII *a*, Nos. 10, 11) and 1 plain rim (Pl. XIII *a*, No. 12). Each of the former has 2 incised parallel lines. These lines are wide and suggestive of the decorative technique of some of the Yokena Incised pottery previously observed in Arkansas. However, they are not spaced close together as in the Marksville. The pale smoke gray paste, tempered with shell, is vesicular which is suggestive of the "biscuit" ware of the Caddo of the Upper Ouachita. These potsherds have a hardness of 2.

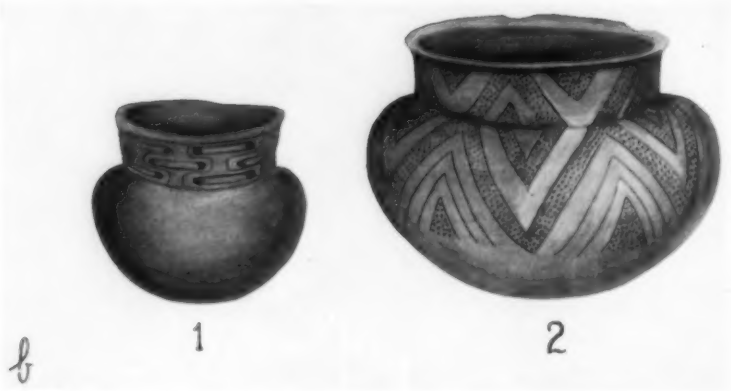
Unclassified Potsherds

Seven plain sherds in this group are clearly related to a limited number of pieces obtained by the Arkansas WPA Archaeological Survey in the excavation of the Adair Site on the North Fork of the Ouachita River in Garland Co., Arkansas. In fact, the similarity is so striking that the sherds could not be separated by those who were not familiar with the respective identification numbers. These specimens, having a rough interior and crackled exterior surface, are made of compact paste that is pallid neutral gray in color. Although the tempering has not been positively identified, it appears to have been sand. The sherds, which have a hardness of 3, are 4 to 5 mm. thick. Just to what complex these pieces should be assigned cannot at present be determined. The Adair Site was

[11] Lemley and Dickinson, 1937, p. 39. [12] Dickinson, 1936, p. 61.



Sherds from various locations in Northeastern Arkansas.



a—Bowls showing Coles Creek Influence.
b—Vessels from the Beck Plantation

Caddoan, but the gray sherds found there do not seem to have been related to that complex. Presumably, both the specimens from here and those from the Bell Place were trade material belonging to some ceramic complex which has not heretofore been recognized in Arkansas.

NODENA PLANTATION, MISSISSIPPI COUNTY

At this plantation, near the village of the same name, the following non-Middle Mississippian wares were represented:

Deasonville Complex

The rims all belonged to vessels which had vertical walls (Pl. XIII *b*, No. 1). The paste is rather homogeneous, and is similar to that of specimens from the other sites which we investigated. Rim lips, occasionally having slight marginal projections, are flat and slightly ovate. One rim is notched (Pl. XIII *b*, No. 2). The decorated pieces have cord markings arranged either in vertical rows or else in such a manner as to suggest crosshatching.

Coles Creek Complex

A Coles Creek bowl of semiglobular form is represented in the material by a rim sherd (Pl. XIII *b*, No. 3), which also has a line incised within its rim lip. The curvature of the walls and the slight internal projection of the lip are suggestive of several sherds from the Marksville-Coles Creek midden at the Kirkham Place, Clark County, Arkansas.[13] The potsherd, tempered with grit, is 6 mm. in width and has a hardness of 3. Its exterior color is drab; the paste core, slate gray. Just below the rim there is a line of fine contiguous incisions made either with a pointed instrument or else by pressing a medium sized cord into the clay. It was impossible to determine which had been done as the vessel wall had been smoothed after completion of the decoration.

Unclassified Sherd

One stamped sherd was found (Pl. XIII *a*, No. 4). Presumably, this rim belonged to a rectangular vessel, as the specimen exhibits almost no curvature. The potsherd, which has a hardness of 3, is of pallid neutral gray paste, and was tempered with grit. Its maximum thickness is 1.1 cm. The walls rise directly to form a right angle with the flattened rim lip. Contraction of the paste during firing resulted in a crackled interior surface somewhat similar to that of certain plain potsherds from the

[13] Dickinson and Lemley, 1939, p. 5.

Brown Plantation in the Bayou Macon area. The exterior wall bears a simple all-over pattern executed with a stamp or a paddle, the surface of which had been cut into squares of 3 mm. This potsherd appears to be related to Ponchartrain Check Stamped, which has been found from southern Louisiana to Avoyelles Parish in that state.[14] This is the first example of an unquestionable stamped sherd to be reported from Arkansas, although a flared rim from the Kirkham Place bears a design in low relief which is suggestive of this technique.[15]

MIDDLE MISSISSIPPIAN POTTERY SHOWING INFLUENCE OF OTHER COMPLEXES

As would be expected, Middle Mississippian ware shows some influence of the Deasonville, Coles Creek, and Marksville complexes. For example, incised lines sometimes occur in the flat rim lips of truncated, conoidal bowls belonging to the former complex. The lines, though, are wider and deeper than those characteristic of the Coles Creek. Furthermore, they are associated with notching on the exterior lip margin of the vessels, which, as has been noted, is a decorative feature of some of the Arkansas Deasonville Cord Marked ware. The University of Arkansas Museum possesses such bowls (Pl. XIV *a*) from Richardson's Landing, Tipton County, Tennessee; the Bell and Nodena Plantations, Mississippi County, Arkansas; Bradley Place, Crittenden County, Arkansas; and the Vernon Paul Plantation, Cross County, Arkansas.

Three potsherds (Pl. XIII *b*, No. 5) form the Golightly Plantation in Crittenden Co., and one from the Bell Plantation have triangular punctations made by holding a blunt instrument at an acute angle, as the Coles Creek potters sometimes did.

Another potsherd (Pl. XIII *b*, No. 6) from the former place apparently was part of a truncated conoidal vessel similar to Marksville and Coles Creek pieces from both the Kirkham[16] and Crenshaw[17] sites. Moreover, the base of this sherd is depressed, as were some from the Kirkham midden.[18] A relationship to Marksville is further substantiated by the Churupa Punctated pattern with which it is decorated, and its silicious paste having additional tempering of poorly pulverized quartz pebbles. The exterior surface coloring is faun, while the paste core is deep gull gray.

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[14] Ford and Willey, 1939, p. 5.
[15] Dickinson and Lemley, 1939, p. 181.
[16] Dickinson and Lemley, 1939, pp. 158, 161.
[17] Lemley, 1936, p. 58, Plate 9, Figs. 1 and 2.
[18] Dickinson and Lemley, 1939, p. 162.

Two vessels in a large collection of Middle Mississippian ware obtained from a cemetery on the Beck Plantation near Hughes, St. Francis Co. have features suggestive of other complexes. However, the specimens themselves clearly belong to the culture phase represented by the other pieces from this site, and must be regarded as vestigial only from the standpoint of decoration.

One of these is a shouldered olla (Pl. XIV *b*, No. 1) having a vertical rim with a simple lip. This vessel, which was tempered with shell, has an oral diameter of 9.7 cm., and is 9.8 cm. high. Its paste is compact. Because of differential firing, the color of the walls ranges from light pinkish cinnamon to black. The incised decoration, confined to a horizontal band separated from the throat and rim lip by two lines, consists of nested and alternating rectilinear figures. Some of the interior lines of these patterns terminate in punctations that are reminiscent of similar features on French Fork Incised jars from the Crenshaw Site.[19] Moore illustrates a vessel having a somewhat similar design from L'Eau Noire Bayou, Louisiana.[20] A bottle found by him in the Rose Mound, Cross Co., Arkansas, has a variation of this decoration which lacks the punctates.[21] He believed that this design was a conventionalization of a snake.[22]

The other vessel (Pl. XIV *b*, No. 2) from the Beck Place is similar in shape to the piece just described, but is larger and has a more pronounced shoulder. Its lip, which is flat, protrudes outwardly. The olla, likewise, is tempered with well-ground shell, and its drab to black color denotes irregular firing. This vessel, like the other, has a hardness of 2, and a maximum wall thickness of 6 mm. The decoration, extending from just below the rim lip across the shoulder and body of the olla, is composed of upper and lower groups of rectilinear motifs outlined by incised lines, and separated by areas of punctations. The figures in the upper row are suggestive of the "Y" motif which occurs on a vessel from Marksville, Louisiana.[23] Although the patterns on the Beck olla show some relationship to the Churupa Punctated, the decorative technique is different: the punctations are smaller and the incised lines are finer than those on specimens belonging to this category from the Kirkham midden.

Another sherd (Pl. XIII *b*, No. 7) having a design related to Churupa Punctated occurred at the Bell Plantation. It belonged to an olla which

[19] Lemley, 1936, Plate 7, Figs. 1, 2, 4, 6, p. 47.
[20] Moore, 1912, Fig. 2, p. 494. [21] Moore, 1910, Fig. 19, p. 291.
[22] *Ibid.*, p. 292. [23] Setzler, 1933, Plate 1.

had perforated handles. The decorative scheme consisted of plain bands outlined by incised lines and arranged diagonally caross the vertical rim. Intervening areas, as well as the handles and body, had been punctated.

From the Middle Mississippian cemetery at Barton Ranch was obtained a semiglobular bowl which has a cambered rim suggestive of certain Marksville specimens. There is also a polished groove, 6 mm. wide, at the point of juncture of the rim with the body. Such grooves, as has been observed, are typical of the Marksville[24] in both Louisiana and Arkansas.[25] The shell tempered paste is tilleul buff in color. Both exterior and interior surfaces had been given a wash of iron oxide that had turned to a brick red color during firing. Vessel walls are 8 mm. thick and have a hardness of 2. Two perforations occur just below the flattened-ovate rim lip.

Middle Mississippian vessel forms, excluding the zoömorphic ones, might have been derived from the Marksville through the Coles Creek and Deasonville. Though functional design would account for the parallel occurrence of common shapes such as bowls, there is less likelihood that more complex types would have been developed independently by potters in ceramic groups which were either contiguous or successive in the same general area. In the collection of Coles Creek ware from the Crenshaw Site there are forms analogous to Middle Mississippian ones. The truncated conoidal[26] and semiglobular[27] bowls having flattened lips and those with flared rims are paralleled in Middle Mississippian material obtained by the University of Arkansas Museum. Moreover, certain forms from the Crenshaw Place are more closely related to those than to Caddoan ones. For example, a jar with ovate body and tall neck[28] reminds one of the typical wide mouth bottle from the St. Francis and Mississippi River valleys of Arkansas. However, the proportions differ; the height of the Crenshaw specimen is greater than that of the body. This type of vessel, insofar as we have observed, has never been reported from a Caddo site. From this type of vessel the funnel neck jars of Vaillant may have been derived. Likewise, a Coles Creek shouldered vessel having a vertical rim could well have been the antecedent of the olla forms from the Beck Plantation.

Certain rim sherds from the Kirkham midden are suggestive of Middle Mississippian ware.[29] In fact, Setzler, who examined a collection of

[24] *Ibid.* [25] Dickinson and Lemley, 1939, Plate 35, Fig. B.
[26] Lemley, 1936, Plate 8, Fig. 6, p. 51. [27] *Ibid.*, Plate 9, Figs. 7 and 8, p. 59.
[28] *Ibid.*, Plate 8, Fig. 7, p. 51.
[29] Dickinson and Lemley, 1939, Plate 36, Figs. E, F, J, p. 163.

potsherds from the surface of this site, stated that one specimen possibly belonged to the Middle Mississippian complex.[30] Another sherd[31] from this place belonged to a shouldered vessel, suggestive of ollas of that ceramic group.

Though the rectangular shaped vessels typical of Marksville, Deasonville, and Coles Creek complexes, seemingly have no exact counterpart in the shell tempered ware of northeast Arkansas, there are a limited number of pieces reminiscent of them. Holmes illustrates a square bottomed piece which most closely approximates that form.[32] However, it lacks any indication of rudimentary feet such as occur on specimens from the Bayou Macon, Ouachita, Little Missouri, and Red rivers. A Middle Mississippian bowl in the University of Arkansas Museum is rectangular in shape, but both its length and width are greater than its height.

It would seem that Middle Mississippian pottery, which apparently belongs to the late prehistoric and proto-historic periods as it has been found in cemeteries containing European trade material,[33] was of heterogeneous origin. Its simplest forms might have been developed independently. Certain shapes such as the olla and funnel neck jar or bottle are suggestive of Coles Creek pieces. Globular bodied vessels with large mouth and narrow rim have counterparts in Deasonville ware. While the annular base of Middle Mississippian pieces may have been a result of Mexican influence, there is the possibility that it was derived from certain Marksville vessel bases which have a pronounced concave lower surface that appears to have been a rudimentary pedestal.[34]

The decoration of shell tempered pottery, especially, points toward an amalgamation of various trends. The red and white pigmented ware of the Middle Mississippian is paralleled by some Deasonville potsherds.[35] Moreover, a red slipped jar was found at the Crenshaw Place;[36] and a potsherd washed with red ochre was encountered at the Kirkham Site.[37] The incised technique is characteristic of Middle Mississippian, Marksville, Coles Creek, and Deasonville, whereas the engraving, as has been previously observed,[38] seems to have been borrowed by potters of the first ceramic complex from the Caddoan. Certain simple relief

[30] Setzler, F. M., Personal Correspondence, December, 1938.
[31] Dickinson and Lemley, 1939, Plate 37, Figs. D and E, p. 167.
[32] Holmes, 1898–99, Plate VIII, Fig. 2.
[33] Moore, 1911, pp. 415, 431, 435. [34] Dickinson and Lemley, 1939, p. 162.
[35] Collins, 1932, Plate 3. [36] Lemley, 1936, Plate 7, No. 4.
[37] Dickinson and Lemley, 1939, p. 179. [38] *Ibid.*, p. 188.

decorations might have been developed through modification of functional features of vessels; the practice of notching rim margins and incising rim lips could have been taken from the Deasonville and Coles Creek complexes, respectively; and influence from aboriginal Latin American groups seemingly accounts for certain composite shapes of vessels as well as their sculptural ornamentation.

The exact chronological relationship between the Middle Mississippian phase and the other ceramic complexes represented by the sherds from this area cannot now be determined. However, it may be presumed that the Deasonville, Coles Creek and probably the Marksville were antecedent as they have been found underlying other historic groups in Arkansas, Louisiana, and Mississippi. The stratigraphic position of the Tunica in northeastern Arkansas is also hypothetical though its occurrence in the upper most level of the Norris Mound would indicate a comparatively late period. In the southeastern part of the state it was the last complex, but unlike its representative in Mississippi,[39] it did not occur with objects of European manufacture.[40] In an effort to solve these problems the writers are now engaged in the preparation of other papers concerning the ceramics in the Mississippi, Arkansas, and White river drainages.

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[39] Ford, 1936, p. 102.
[40] Lemley and Dickinson, 1937.

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THE MANITUNIK ESKIMO CULTURE OF EAST HUDSON'S BAY[1]

GEORGE I. QUIMBY, JR.

ARCHAEOLOGICALLY, the east coast of Hudson's Bay is an unexplored area. There never has been scientific excavation undertaken in this region, although the Eskimo inhabitants have been plundering the "Tunit" graves and old tent sites for many years. However, some archaeological information based upon collections from the Belcher Islands and Port Harrison, is available. In 1921–24 Dr. Knud Rasmussen and Dr. Therkel Mathiassen obtained, collections from the Belcher Islands and Port Harrison for the Fifth Thule Expedition.[2] Mr. J. Kenneth Doutt of the Carnegie Museum, Pittsburgh, secured additional artifacts from the Belcher Islands in 1938, which have been described and analyzed by Dr. Diamond Jenness.[3] In the summer of 1939, the writer secured archaeological materials from Eskimos on Tukarak and Inetelling Islands in the Belcher Group.[4]

Although all of the artifacts from the east Hudson's Bay region have been excavated by Eskimos, the reasonably specific provenience, and lack of other data lend some scientific value to these collections. The artifacts for the most part came from individual graves; it is likely that some came from the shallow refuse of old tent rings. Dorset traits present in the collections are probably the result of admixture with Thule which had already taken place at the time of occupation, rather

[1] The writer is indebted to the Administration of the Northwest Territories of Canada for permission to undertake archaeological and ethnological investigations in the Keewatin District. Thanks are due to Dr. Frederica de Laguna, Mr. Henry B. Collins, and particularly Dr. Diamond Jenness for advice, information, and assistance. The entire study has been guided by Dr. Jenness. The writer also wishes to express his gratitude to Dr. George M. Stanley, glacial geologist, and senior member of the expedition.

[2] Mathiassen, T., *Archaeology of the Central Eskimos*, Report of the Fifth Thule Expedition, 1921–24, Vol. IV, Parts I and II, Copenhagen, 1927. See Plate 77 and Fig. 98 as well as text.

[3] Jenness, D., "An Archaeological Collection from the Belcher Islands, Hudson's Bay," in manuscript, to be published by the Carnegie Museum of Pittsburgh.

[4] The writer, as assistant to glacial geologist, Dr. George M. Stanley, on a University of Michigan expedition to the east coast of Hudson's Bay, was commissioned by the Department of Anthropology at the University of Chicago, to make a preliminary archaeological survey, incidental to the primary geological aims of the expedition. The archaeological collection was obtained by the writer and Dr. Stanley. Considerable assistance in obtaining the specimens was rendered by the University of Minnesota botanical expedition, consisting of Dr. and Mrs. Ernst Abbe and Mr. John Marr.

than representations of a stratified culture series. Evidence from the sites excavated by Dr. Mathiassen in northern Hudson's Bay corroborates this suggestion. In short, the available evidence points to a single, rather distinct Eskimo culture in the eastern Hudson's Bay region. This will be referred to in this paper as the Manitunik culture.

It is the intent of the writer to summarize the data already published,[5] and at the same time to present the information resultant from the artifacts obtained from the Belcher Islands in 1939. These data have been interpreted by Dr. Jenness and the writer.

HOUSE TYPES AND GRAVES

Moss and lichen covered boulders arranged in ovals or rectangles manifest the former dwellings of the Manitunik people. The oval tent rings are about twelve feet in diameter, the rectangular, twenty by ten feet. Gaps in the boulders in the middle of the long side, facing the sea, indicate doorways. In the middle of the rectangles opposite the doors are rock slabs, perhaps cooking platforms. However, these are not found in the oval tent rings. Both types of dwellings occur together at the village site near Haig Inlet, although in other localities only the oval tent rings were observed.

There is no positive evidence from the Belcher Islands to link the tent sites with the other artifacts, nevertheless the apparent absence of any evidence indicating other types of dwellings, strengthens the supposition that the domiciliary remains and the artifacts are of the same culture. Much of the Port Harrison collection came from oval tent rings similar to those on the Belchers. The semisubterranean house characteristic of the Thule culture seems to be lacking in this area, although the oval tent rings accompanied the Thule houses in the northern Central Arctic.

The cemeteries sometimes follow ancient lines of wave-deposited gravel or may be on the bare rock. The dead were covered with a cairn of rocks and boulders and beach gravel. Burial furniture accompanied the dead. Graves are the main source of artifacts obtained by the relic-collecting Eskimos. The only grave examined by the writer had been so disturbed that the position of the skeleton could not be determined.

HUNTING AND FISHING TOOLS

Harpoon Heads. Fourteen bone and ivory open- and closed-socket harpoon heads were in the collection obtained by the writer and there were seventeen in the collection analyzed by Dr. Jenness. Dr. Rasmus-

[5] Mathiassen, *op. cit.*, and Jenness, *op. cit.*

sen obtained none, and Dr. Mathiassen received at least four from Port Harrison. Below are tabulated the harpoon head types and their frequency by collections.[6]

	Type	Present Collection	Jenness	Mathiassen
AIa	(Thule type 1)	0	1	0
AId1	(Thule type 2)	1	0	0
AId2	(Thule type 2)	1	0	0
AId3	(Thule type 2)	0	0	1
AIc1	(Thule type 3)	2	6	1
AIIc1	(Thule type 5)	6	4	1
BI		1	1	1
BIIc		3	5	0

The types are similar to those excavated by Dr. Mathiassen from sites in the northern Hudson's Bay region. However, the *AId* variants have the shank gracefully tapered above the line hole instead of the slight constriction which seems characteristic of the type as found farther north. Interestingly enough, both the writer's and Dr. Jenness's collections contained *AIc1* harpoon heads with iron blades. One of the *AIIc1* heads in the present collection had a facet-ground bone blade in the slot. The remaining harpoon heads in all three collections did not have blades in the slots. Some harpoon heads from the writer's collection are illustrated in Fig. 17, *i–n*.

Harpoon Blades. Facet-ground, slate harpoon blades were present in all four collections. In outline they are ovate-triangular and somewhat broad. Usually they are drilled for rivets, the holes ranging in number from none up to five. The shoulders may be straight, either perpendicular or at an angle horizontal to the main axis, or rounded. There are four of these in the present collection, eight in the collection described by Jenness, eleven among the artifacts secured by Dr. Rasmussen, and two from Port Harrison which have been analyzed by Dr. Mathiassen. An additional variant described by Dr. Jenness had an asymmetrically barbed shoulder, and one obtained by Dr. Rasmussen had three vertical grooves at the base. In the present collection were three facet-ground bone harpoon blades. They are thin, ovate-triangular in outline, and have straight perpendicular shoulders. In proportion to their width they are narrower than the slate blades. There were two similar bone blades in the collection described by Dr. Jenness.

[6] Mathiassen's typology and symbols are used for the description of the harpoon head types.

Harpoon Gear. A decorated ivory cap, probably for the butt of a harpoon shaft, and a long ivory ice pick were among the artifacts received from the Eskimos by the writer. In both the present collection and the one analyzed by Dr. Jenness were ivory finger rests, bone and ivory line swivels, bone and ivory bladder inflators, and harpoon rests of bone and ivory. Bone and ivory stoppers for bladder inflators were described by Dr. Jenness.

An ivory harpoon foreshaft of the fixed type was in the collection studied by Dr. Jenness. It had two parallel lashing holes side by side. This seems to be a rather unique specimen, and possibly is diagnostic of the Manitunik culture.

Another, probably diagnostic, type of fixed foreshaft from the writer's collection is made of antler and has a long scarfed base. Both collections contained ivory harpoon foreshafts of the movable type as well as ivory foreshaft sockets with roughened tanged bases. Two examples of the ivory cap type of foreshaft socket have been described by Dr. Jenness.

Bladder Dart Heads. Exceptionally long bladder dart heads of bone and ivory have been reported from the Belcher Ilsands by Dr. Jenness and from Port Harrison by Dr. Mathiassen. A bladder dart head in the present collection measures 44. cm. in length and is illustrated in Fig. 17, *d*. In all three specimens the barbs were made by drilling overlapping holes. Dr. Jenness has already remarked upon the rather unique character of these artifacts, and they seem to be a rather characteristic Manitunik trait. A much smaller bone bladder dart head obtained by the writer has two bilateral barbs, a rough, bifurcated base, and a lashing hole. The overlapping drilled hole technique was employed in its construction.

Lance Heads. From the Belcher Islands, the writer obtained an ivory lance head of the "fixed" type with a lashing hole and an iron blade in the slot. It seems to be rather modern. Of the five "loose" type open-socket lance heads described by Dr. Jenness, three are flattened at the fore end for a blade, one is slotted for a blade, and one was designed for use without an attached blade. All have lashing holes to hold the shaft in the socket. These have not yet been reported from Port Harrison.

Lance Blades. In Dr. Mathiassen's collection from Port Harrison were three facet-ground slate lance blades with edges alternately ground from one side only, and notched near the base. Both the techniques of notching and alternate beveling are known for Dorset chipped stone artifacts, and as Dr. Jenness has pointed out, it is likely that this may be

evidence of a Dorset tradition manifesting itself in the ground stone manufacture of the Manitunik.

Four flat triangular blades with long flat tangs of ground slate and nephrite, were reported from the Belcher Islands by Dr. Jenness. Illustrated in Fig. 17, *e* is a large lance blade from the present collection. It is broad, ovate in outline, and the stem or tang has two notches on each side. This is, perhaps, another example of the Dorsetoid influence in the Manitunik culture.

Arrow Heads. An antler arrow head, without barbs, and with base cut obliquely was in the collection that Dr. Mathiassen obtained from Port Harrison. Among the artifacts obtained by the writer are two bone arrow heads slotted for blades. In one of these there still remained a small ovate-triangular facet-ground slate blade with rounded shoulders. From one specimen the basal part was missing, and the other had a shouldered conical tang. Also present in the collection were two barbed arrow heads of bone, with shouldered and tanged bases with knobs. One of these was unilaterally barbed, the other bilaterally. Dr. Jenness has described a similar bilaterally barbed arrow head with a broken base.

Blades for Arrow Heads. Some of the slate blades used in arrow heads were similar to those used in harpoon heads. The blades used in arrow heads, however, were generally smaller. The blade type already described with the arrow heads is a typical example, and has also been reported by Dr. Jenness. Chipped stone triangular projectile points with concave bases were in the collections obtained by Dr. Mathiassen and Dr. Rasmussen, and three such specimens have been described by Dr. Jenness. Also in the collection analyzed by Dr. Jenness were four facet-ground narrow triangular slate points with one or more pairs of notches along the side near the base; one slate point of similar shape, but without notches, and alternately beveled; and one facet-ground slate triangular point with a concave chipped base. The probable Dorset origin of the chipped stone concave-base projectile point as well as the tradition of notching and beveling has already been stated by Dr. Jenness.

Marlin Spikes and Sinew Twisters. That the Manitunik possessed the sinew backed bow is manifested by two sinew twisters and two marlin spikes in the collection obtained by the writer. The sinew twisters, rather small, are made of bone and turned up at both ends, but in opposite directions. Similar sinew twisters from Ievoghiyoq are illustrated by Mr. Collins.[7] The two marlin spikes for the back lashings of the bow are made of ivory.

[7] Collins, Henry B., Jr., *Archaeology of St. Lawrence Island, Alaska*, Smithsonian Miscellaneous Collections, Vol. 96, No. 1, 1937, p. 223, and Plate 74, Figs. 19 and 20.

Spear Throwers. In the present collection there is an ivory button which was part of a spear thrower. This button is trianguloid in outline with beveled sides and there is a small knobbed projection at the base. Inset and pegged into the top of the wood spear thrower at the base of the spear shaft groove, the ivory button's function was to engage the butt of the spear. A similar object of ivory is illustrated by E. W. Hawkes in a spear thrower from Cape Wolstenholme, Labrador.[7a]

Prongs for Spears and Darts. In the present collection are six bone prongs for salmon spears. They are similar to those which Dr. Mathiassen excavated from his Thule sites in northern Hudson's Bay. Two of these prongs have been described by Dr. Jenness, and they were present in the collections obtained by Dr. Rasmussen and Dr. Mathiassen. A slate prong of similar shape from Port Harrison seems to represent a unique Manitunik trait. In the Belcher Islands collection analyzed by Dr. Jenness were fragments of two barbed leister prongs of ground slate, seemingly diagnostic of the Manitunik culture.

Out of a total of eight bone side prongs for bird darts, two in the present collection and six in that analyzed by Dr. Jenness, seven are unilaterally barbed and one is bilaterally barbed. Barbed bone side prongs also were found at Port Harrison to the north. These artifacts are similar to those which Dr. Mathiassen found in his northern Hudson's Bay Thule sites.

Composite Fish Hooks. Apparently diagnostic of the Manitunik culture are four types of composite fish hooks. The first, illustrated by the example in Fig. 17, *g* is a short, thick, ground slate shank, round in section, with a vertical groove at the bottom into which the bone hook fits. There are notches at the bottom for lashing the bone hook to the shank and notches at the top for line attachment. Two of these are in the present collection and also have been described by Dr. Jenness.

The second type, an example of which is illustrated in Fig. 17, *b* is characterized by a somewhat longer, flat, thin, ground slate shank which is knobbed or notched at the top for line attachment. It has a vertical groove at the bottom for the bone hook, and notches for lashing the hook into place. The writer obtained two specimens of this type, which also was represented in the collection analyzed by Dr. Jenness.

Illustrated in Fig. 17, *c* is an example of the third type of composite fish hook. The ground slate shank is thin, flat, long, and is notched at the top for line attachment. At the base are two divergent grooves into which fit the butts of the bone hooks. The base also is notched to re-

[7a] Hawkes, E. W. *The Labrador Eskimo*, Memoir 91, Geological Survey; No. 14 Anthropological Series, Canada Department of Mines. Ottawa 1916. Page 78, figure 20.

ceive the lashings which secure the bone hooks in the grooves. In addition to the example of this type in the writer's collection, there were three others from the Belcher Islands which have been analyzed by Dr. Jenness.

Seven examples of the fourth type of composite fish hook, which is made of bone, were recorded by Dr. Jenness. These were bone shanks, perforated at the top for line attachment, and drilled aslant at the base to receive the butt of the bone hook. Four of the specimens were made from the flipper bones of seals.

The bone hooks for use in the first three types of shanks are notched at the base and have a single barb on the inner side at the top. Two of these were obtained by the writer. Two bone hooks for use with the fourth type of shank were described by Dr. Jenness. These hooks are barbed, but are not notched at the base.

Bird Bolas Weights. In the present collection are two faceted block type of bolas weights made of ivory. Each has a single perforation. It is possible that some of the heavier walrus teeth pendants, described in the section dealing with ornaments, were bolas weights.

HOUSEHOLD TOOLS

Ivory Snow Knives. Somewhat diagnostic of the Manitunik culture are Thule type ivory snow knives with bilateral knobs at the ends of the handles. However, these are also known to occur among nearly modern Eskimo bands in the Hudson's Bay area. The older Thule type snow knife seems to have had a unilateral knob on the handle, slanting in the direction opposite to the convex curvature of the blade.

In the present collection are three ivory snow knife blades, cut off squarely at the base, and with lashing holes for attachment to the handle. One such specimen was in the collection obtained by Dr. Rasmussen, and five examples have been described by Dr. Jenness. A variant described by Dr. Jenness is a tanged double-shouldered ivory snow knife. Two ivory snow knife handles in the collection studied by Dr. Jenness and one in the collection secured by Dr. Rasmussen have double shoulders and bilateral knobs on the ends. A similarly knobbed wood handle was in Dr. Rasmussen's collection.

Women's Knives (Ulos). Exceptionally large, chipped slate ulos seem to be diagnostic of the Manitunik culture. The specimen illustrated in Fig. 17, *a* is 27 cm. wide. A similar ulo was in the collection received by Dr. Rasmussen, and an additional one has been described by Dr. Jenness. That they may be unfinished specimens is a possibility, yet they are larger than the ground specimens. The large number of chipped

slate, or battered slate artifacts from Port Harrison, led Dr. Mathiassen to believe that these were finished implements.

Smaller ulos of ground slate are numerous on the Belcher Islands. Dr. Rasmussen obtained five, the writer three, and there were thirty-three in the collection described by Dr. Jenness. They were found also at Port Harrison. The most common type has a broad rectanguloid tang, slanting shoulders, and a curved blade. A few specimens had rivet holes in the tang, one had a notched tang, and still another had a finger-grip hole just beneath the tang. Two specimens from the Belchers were without tangs, but pointed at the top.

Two modern ivory ulo handles with slots and rivet holes were in the present collection, and two were reported by Dr. Jenness. However, neither collection contained iron ulo blades.

Men's Knives. The technique of chipping or battering slate is manifested in the double-shouldered, double-edged, straight knives with long tangs. These have been reported from Port Harrison, one was in the collection analyzed by Dr. Jenness, and another, obtained from Belcher Island Eskimos by the writer, is illustrated in Fig. 17, *h*. A similar knife of ground slate is in the present collection, and three were reported by Dr. Jenness.

Dr. Jenness also has described two straight double-edged knives of ground slate. Shoulders were lacking, although they had tangs which were a continuation of the blade. One specimen had alternately beveled edges, the other had edges ground from both sides in the usual way.

Forty-four ground slate single-edged knives with straight backs, curved cutting edges, and long tangs were described by Dr. Jenness. One specimen was in the present collection.

Another, possibly diagnostic, Manitunik trait is represented by thin, short, single-edged ground gravers, two of which have been reported by Dr. Jenness. The blade was sharpened from both sides.

Two rather modern knives with ivory and bone handles and iron blades were in the present collection. The ivory handle is decorated crudely with a row of drilled holes, the other handle is undecorated.

Skin Scrapers. Ground slate skin scrapers with curved grips have been reported from Port Harrison, to the north. Two specimens of the same type were in the collection reported upon by Dr. Jenness, and there is a single scraper of this kind in the writer's collection. Also in this collection is a caribou scapula scraper similar to those which Dr. Mathiassen found in the northern Hudson's Bay sites.

Whetstones. In the Belcher Islands collection described by Dr. Jen-

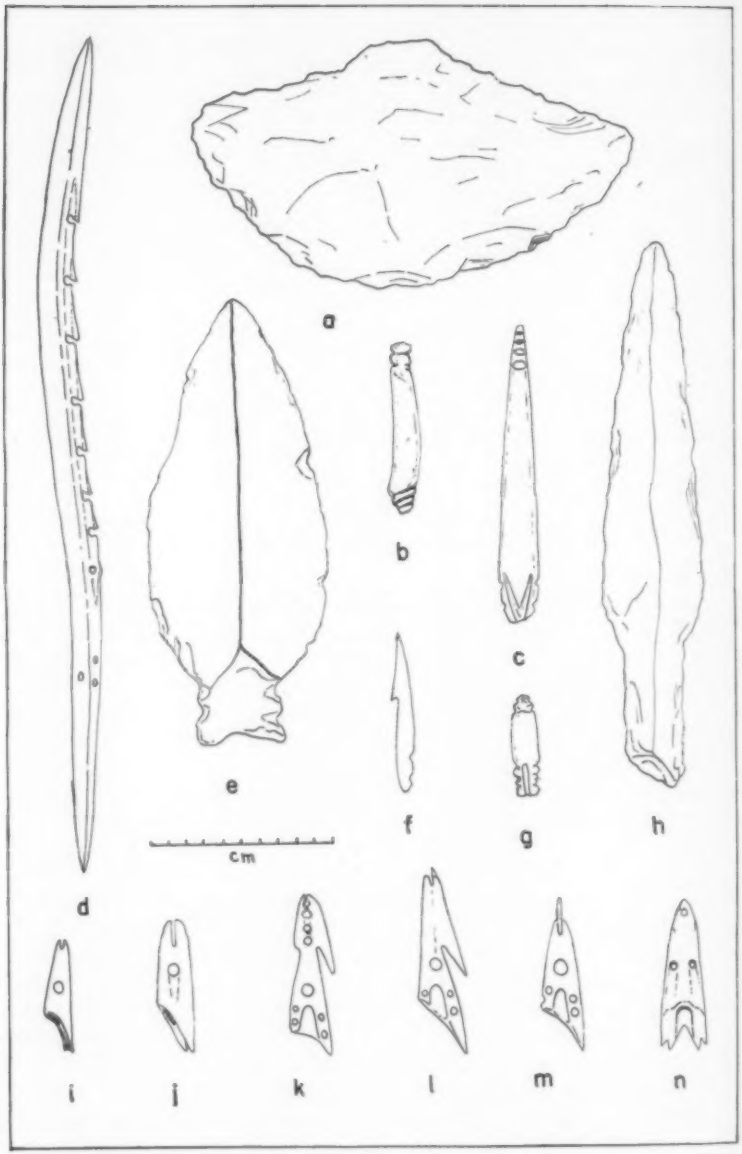

FIG. 17.—Bone, ivory, and slate artifacts from the Belcher Islands.

ness were twenty-four slate or sandstone rectangular bar whetstones. There is a similar specimen in the present collection, and one has been reported for the Port Harrison sites.

Adzes. A rather unique adz blade in the collection reported by Dr. Jenness was made of ground slate, rectanguloid in shape, and grooved for attachment to a handle. In addition there were two ungrooved specimens of similar shape. Also in the collection was a bone adz head with a socket for a blade and a hole for a handle. No adz parts were obtained by the writer, nor have any as yet been reported from Port Harrison.

Drilling Equipment. The only drill specimen obtained on the Belcher Islands is made of nephrite, has three facets on the point, a round polished shank, and a rough sawed base. A similar specimen in the possession of a Nastapoka Sound Eskimo, seen by the writer, was said to have come from the Belcher Islands.

In the present collection is a mouth drill-socket made of a caribou astragalus and a hand socket made from a polar bear canine tooth. Dr. Jenness has described two mouth sockets made of caribou astragali.

Lamps. Two miniature soapstone lamps, one in the present collection, the other reported by Dr. Jenness, have come from the Belcher Islands. The first-mentioned specimen is trianguloid in outline, shallow, and has a flat bottom. The other is oval in outline, although similar in other characteristics. The first type seems to be late Thule in type, the second however has some resemblances to Dorset lamps, although it lacks the round bottom.[8] Possibly this is another manifestation of the indirect Dorset influence which seems to have been present in the Manitunik culture.

Toggles for Dog Harness. The Thule influence in the culture of the Manitunik is also seen in the ovoid toggles for dog harnesses. These are of two types; one, in which the axes of the large and small holes are parallel, and the other in which the axes of the large and small holes are at right angles. They may be either of bone or ivory. In some instances, vertical channels led from the small holes of the toggles in the first class. The present collection includes three specimens of each type. In the collection analyzed by Dr. Jenness there was one example of the first class and two of the second. None were reported for Port Harrison, although they are well known from sites in northern Hudson's Bay.

Buckles. At least three types of buckles have been found on the Bel-

[8] Jenness, Diamond, letter of Nov. 8, 1939, based on information from Mr. Graham W. Rowley who excavated a pure Dorset site in Foxe Basin.

cher Islands. Two large oval buckles of bone in the present collection are plano-convex in section and have two parallel holes through the middle joined at the top by connecting grooves. Dr. Jenness has described four buckles made from the teeth of the Harbor Seal. These also have paired parallel holes in the center. The writer's collection contains two decorated ivory barrel-shaped buckles, slightly flattened on the back side. In the middle of the flattened side are one or two pairs of drilled holes which converge. A similar specimen was reported by Dr. Jenness. The engraved decoration on these specimens is described in the section dealing with Manitunik art.

Needle Cases. The winged type ivory needle case with a central ridge parallel to the long axis seems to be a diagnostic Manitunik trait. A specimen from Port Harrison described by Dr. Mathiassen has been engraved with representative Manitunik decoration. In the collection from the Belchers obtained by Dr. Rasmussen there was an undecorated ivory needle case. Turner has described two rather similar although modern specimens which came from the Ungava area.[9] Without the central ridge, the winged type needle case is rather characteristic of the Thule culture.

Handles for Carrying Things. In the writer's collection are two bone and ivory handles for carrying things. These are of the "suitcase" variety, and are somewhat similar to the Old Bering Sea pail handles illustrated by Mr. Collins.[10] A winged type object with a hole in the middle, possibly a handle, has been described by Dr. Jenness. A larger specimen of slightly different form and ornamented with engraved designs, from the present collection is illustrated in Fig. 18, *a*. The decoration is discussed in the section dealing with Manitunik art.

Ivory Pins. In the present collection were two ivory pins, round in section, and tapering from top to a wedge-shaped bottom. These objects have two carefully executed encircling grooves around the upper part and a single groove around the lower extremity. Their former function is somewhat of a problem.

Slate Counters. Probably representative of a Manitunik cultural trait are the eighteen flat, thin, ground slate disks which have been described by Dr. Jenness. So far they seem to be known only for the Belcher Islands. Possibly they were used as counters in some game.

Chisel or Boot creaser. In the collection analyzed by Dr. Jenness there

[9] Turner, Lucien M., *Ethnology of the Ungava District, Hudson Bay Territory*, 11th Annual Report of the Bureau of American Ethnology, 1894, Figs. 72 and 73, p. 254.

[10] Collins, *op. cit.*, Plate 47, Figs. 3 and 4.

was a small nephrite implement described as follows: "The fore-end has been beveled to a sharp chisel-like edge, one side-edge ground smooth, and the other side-edge beveled from both faces. The base is broken off. Near the front end is a notch, presumably for hafting." As Jenness has pointed out, this object may be representative of the probable indirect Dorset influence in the Manitunik culture.[11]

ART

Manitunik art is rather unique. Although the design elements are not new, the way in which these elements are combined separate Manitunik art from that of other cultures. Decoration was applied to utilitarian objects as well as to purely ornamental artifacts. The techniques employed were carving, drilling, and engraving, perhaps with metal tools, and the materials utilized were principally bone and ivory.

The present collection contains ten flat, elliptical plaques or gorgets of ivory or bone, with perforations at one or each end which probably were used for suspension or attachment. These plaques, illustrated in Fig. 18, *b–g*, *i*, and *l–n*, are characterized by the unusual use of border type designs to cover the total space available; the use of the Y-element on a base line is shown in Fig. 18, *b* and *d;* the use of the double ended Y-element in a center panel, Fig. 18, *e*, *g*, *i*, *l*, *m;* the V-element on a base line, Fig. 18, *n;* the zigzag and/or joined V-element, Fig. 18, *c–g*, *i*, and *l–n;* the use of short straight lines, floating in a center panel, Fig. 18, *d;* the use of the slanting spur element, Fig. 18, *d;* double curvilinear and angular lines joined in an interlocking geometric pattern, Fig. 18, *b;* and the X-element in a center panel, Fig. 18, *f*.

A similar unfinished ivory plaque was in the collection analyzed by Dr. Jenness, and three similar specimens were in the collection obtained by Dr. Rasmussen and described by Dr. Mathiassen. Mathiassen's plaques are also characterized by the use of border type designs to cover the object and the Y-element on a base line. In addition, there is the use of the joined Y-element on a base line. Mathiassen illustrated two of these ornaments.[12]

Other engraved artifacts in the present collection are an ivory butt cap for a wooden harpoon shaft, decorated with a rather long double-ended Y-element, an ivory problematical object ornamented by a border of zigzags and/or joined V-elements, and an ivory handle for carry-

[11] Cf. Wintemberg, W. J., "Eskimo Sites of the Dorset Culture in Newfoundland, Part II." AMERICAN ANTIQUITY, Vol. V, p. 316.

[12] Mathiassen, *op. cit.*, Plate 77.

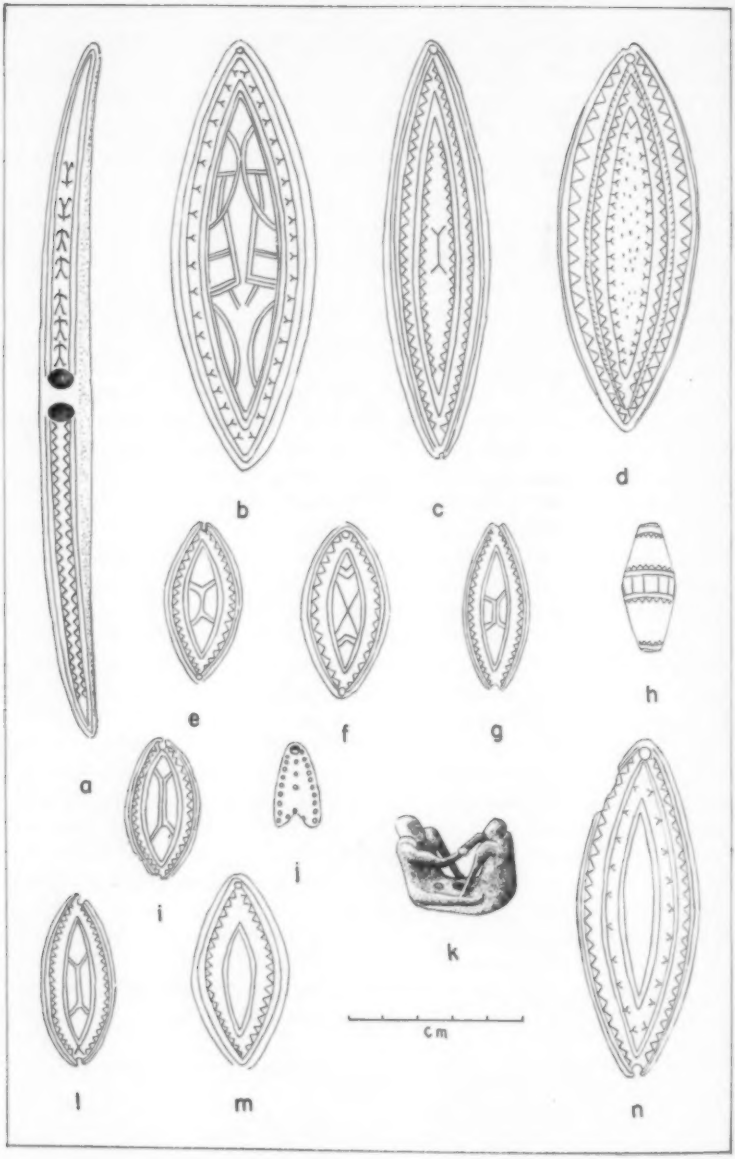

FIG. 18.—Decorated objects from the Belcher Islands.

ing things which is illustrated in Fig. 18, *a*. Decoration of the last consists of a border of zigzags and/or joined V-elements and a center panel filled with conventionalized man elements. In addition, two or three of the man elements are engraved on either side of the object at its midpoint.

Two barrel-shaped ivory buttons with flattened backs, at the center of which are converging joined drilled holes, are ornamented with borders of zigzags and/or joined V-elements. One of these, illustrated in Fig. 18, *h*, has a central border made up of the ladder element. The specimen not illustrated is almost identical to one described by Dr. Jenness.[13]

An ivory winged type needle case with a median central ridge which Mathiassen obtained from Port Harrison is decorated with engraved Y-elements on a base line, short vertical spurs, and zigzags and/or joined V-elements. This needle case is illustrated in Mathiassen, Fig. 98.[14]

Carved objects in the present collection include a flat bottomed Thule type duck and a realistic carving of two seated wrestlers. The musculature of the arms is well done, the facial features are lacking, the face flattened. The head has a rather scaphoid appearance. This carving is illustrated in Fig. 18, *k*. In Mathiassen's collection from Port Harrison is a realistic carving of a walrus,[15] similar in execution to the "wrestlers."

Objects ornamented by means of the drilling technique are an ivory, plano-convex triangular bead with a bifurcated base and a perforated apex, the design consisting of rows of drilled holes. It is illustrated in Fig. 18, *j*. Two ivory cylindrical beads, grooved around the middle and perforated by converging joined holes at the top, are also decorated with rows of drilled holes. In the collection described by Dr. Jenness there is a thin oval hairplate of ivory which is ornamented by rows of drilled holes.

Although no combs were present in the collection obtained by the writer, there were two in Jenness's collection, both made of ivory. One of these was of the type with a solid handle, the other with "windows" in the handle.

Large quantities of walrus teeth drop-pendants were in the present collection as well as those described by Jenness and Mathiassen. Also present in the three collections from the Belchers are drop-pendants of seal and dog teeth, and polar bear canine teeth.

Two bone disk beads are in the present collection, and one slate disk bead also. Jenness's collection contained two of the slate disk beads. Possibly these are also a diagnostic Manitunik trait.

[13] Jenness, *op. cit.* [14] Mathiassen, *op. cit.*

[15] Mathiassen, *op. cit.*, Fig. 81.

CONCLUSIONS

The majority of the elements representing the Manitunik culture may also be found in Thule sites of the north Hudson's Bay region, but as Dr. Mathiassen has pointed out, the majority of Thule trait elements are common to all Eskimo cultures.[16] Many of these widespread Eskimo traits are those which link Manitunik and Thule. In the writer's opinion there is not one single trait which can be demonstrated to be truly diagnostic of Thule, not shared by any other Eskimo culture. Nevertheless, by taking traits which are shared by Thule and any given one of the other Eskimo cultures (e.g., Old Bering Sea, Punuk, Birnirk, Dorset, Inugsuk, Western modern, Central modern, Greenland modern, and Manitunik), and viewing these traits in a particular context or unique association of these traits, it is possible to recognize, more or less, an entity which can be labeled Thule. This Thule mixed with Dorset seems to have been the foundation upon which the Manitunik culture was built, and is found as such an admixture in the northern Hudson's Bay region (e.g., all of the sites Dr. Mathiassen excavated, except Dorset sites, Sadlermiut, and modern). It is very probable that the Thule-Dorset foundation of the Manitunik culture moved southward, along the east coast of Hudson's Bay. Some of these traits from the Thule-Dorset foundation of the Manitunik culture which seem much more at home in Dorset are the following; realistic ivory carvings of animals and humans, triangular chipped stone projectile points with concave bases, stone blades with one or more notches along each side (more of an influence in this case because these are ground, Dorset are chipped), boot creaser, slate blades ground on opposing edges (again an influence as Dorset types are chipped), and small ground projectile points with two holes side by side.

A number of traits, however, seem to be somewhat diagnostic of the Manitunik culture. These traits are: oval and rectangular tent rings to the exclusion of other observable types of dwellings; some recurring variants on the Thule Type 2 harpoon head theme, specifically a gracefully tapered shank instead of the constriction above the line hole which seems to characterize Mathiassen's type; exceptionally long bladder-dart heads; the shaping of bone and ivory by the overlapping drill hole technique; small and large ground slate blades with one or more notcesh at each side of the base; barbed leister-prongs of slate; slate side-prongs for salmon spear; three types of stone fishhook shanks; one type of bone fishhook shank; two types of bone hooks for attachment to afore-

[16] Mathiassen, *op. cit.*

mentioned shanks; the bilateral knobs at the ends of handles for double-shouldered snow knives; exceptionally large ulos of ground or battered slate; well-developed chipped slate complex; ground slate gravers; ground slate rectanguloid adz blades with grooves for attachment to handle; stone and bone disk beads; winged needle cases with median ridges; and a distinctive type of art.

The design elements utilized in Manitunik decorative patterns are also to be found in other cultures of the Central-eastern Arctic and Sub-Arctic. However, the particular combinations of these elements is the result of distinctive Manitunik ideas.

The elements of Manitunik designs are shared variably with Thule, both old and transitional; the Copper Eskimos of Coronation Gulf; Nascapie; and Beotuk. The zigzag element is quite prominent in Beotuk art,[17] and is also present in the designs of the Copper Eskimo.[18] Most probably, the zigzag is an Indian element taken over by the Eskimo.[19] This element seems to be absent from Thule designs, and it is likely that its importance in Manitunik art is due to Indian influence. Unfortunately, the zigzag element is absent in Nascapie art, but ought to be present, since Nascapie and Beotuk share other elements such as the ladder and X, and were in temporal and geographical proximity.

In addition to Nascapie and Beotuk, the ladder element with vertical bars is present in Manitunik, but seems to be absent from Thule.[20] Possibly the Manitunik ladder design is also derived from Indian, Nascapie or Beotuk, although in the Western Arctic it is an ancient and widely used element.[21]

The drilled dot and the Y-element are seemingly common to all Eskimo art in the Central and Eastern Arctic. The V-element in Manitunik art is probably related to the Y-element. It is also present in Nascapie and Copper Eskimo art.[22] However, the double-ended Y-element is more at home in Manitunik design, but also occurs in the decoration of the Copper Eskimo.[23] The X-element is shared by the Nascapie and Manitunik, and perhaps is indicative of cultural interinfluence between these two. Not diagnostic of Thule art, the conventionalized

[17] Howley, J. P., *The Beotuks or Red Indians; The Aboriginal Inhabitants of Newfoundland*, Cambridge, 1915.

[18] Jenness, Diamond, letter of December 18, 1939.

[19] de Laguna, Frederica, letter of December 2, 1939.

[20] Howley, *op. cit.*, Jenness, *op. cit.* Mathiassen, *op. cit.*

[21] de Laguna, *op. cit.*

[22] Jenness, Diamond, letter of December 18, 1939.

[23] Jenness, Diamond, *op. cit.*

man element is known for late Thule of the Foxe Basin and Manitunik.[24] It is of interest that certain common Thule elements such as the alternate spur and the alternate spur thickened at the base do not occur in Manitunik design. The rest of the design elements found in Manitunik are known from the Western Arctic both ancient and modern and it is likely that they occur in Thule of the Eastern Arctic.

Manitunik art seems to have enlarged considerably upon the Thule concept of border designs. Whereas Thule generally used a single border, Manitunik all but covered the object to be decorated with border designs, and although some of the decorative elements employed were Thule, others decidedly were not.

The remaining majority of traits or trait elements from the Belcher Islands and Port Harrison which are neither diagnostic of Dorset or Manitunik, are all known for Thule sites and vary from traits which have some diagnostic value for Thule to traits which have none at all. Some of the traits which probably limit the definition of Thule are the double-shouldered snow knife without the bilateral knob on the handle, and characteristic Thule Type 2 (*AId3*) harpoon heads. However, the writer is not in a position to make a definitive evaluation of traits occurring in Thule sites. But even without such an evaluation it seems quite apparent that Thule mixed with a little Dorset was the base upon which the Manitunik culture was built.

Several facts suggest that the Manitunik culture is not old. First among these is the fact that the Thule culture is not old in this region. Spreading eastward from the western Arctic, perhaps less than a thousand years ago, it mixed to some degree with the older Dorset culture. This mixed Thule-Dorset foundation of the Manitunik culture moved southward down the east coast of Hudson's Bay, developed new traits, and received cultural influences from coastal Indians.

Iron harpoon blades are found in the Manitunik variant of the Thule Type 3 harpoon heads, a type which Mathiassen considered representative Thule. The engraved decorated objects seem to have been executed with iron tools. Thus, iron seems to have been present in the Manitunik culture. On the assumption that this iron was obtained through some kind of contact with European cultures, it must necessarily have been relatively late. Dr. Jenness places the date at about the middle of the 16th century or later.[25] Of course the Manitunik

[24] Jenness, Diamond, letter of January 13, 1940. "On fragmentary snow goggles brought from Foxe Basin sites by Mr. Graham Rowley."

[25] Jenness, Diamond, "An Archaeological Collection from the Belcher Islands, Hudson Bay." In Ms. To be published by the Carnegie Museum, Pittsburgh.

culture probably was in the area before this approximate date, and probably persisted into later times.

To summarize: The Manitunik culture of the east coast of Hudson's Bay is built upon a Dorset influenced Thule foundation. This culture developed a number of new and rather diagnostic traits, and probably received influences from Indians ancestral to the present Algonkian-speaking groups which inhabit the Labrador Peninsula. The Manitunik culture does not seem to be very ancient.

Louisiana State Archaeological Survey
University, Louisiana
February, 1940

FACTS AND COMMENTS

COMMENT ON AN OKLAHOMA PICTOGRAPH

Mr. A. T. Jackson, in his extensive report on picture-writing of Texas Indians, calls attention to twenty-three square-shouldered human figures found in the course of his survey. According to the report, thirteen Texas counties and one New Mexico county possessed this type of figure.[1] It is mentioned that several hundred miles separate the Texas sites from the typical Southwestern culture with which they appear to be linked. The farthest east that pictographs have been found is Concho County, Texas.

In March, 1939, the writer published a report on a prehistoric rock-shelter site in Pontotoc County, Oklahoma.[2] The most outstanding feature at this site was a square-shouldered figure in one of twenty pictographs which adorn the shelter walls. It is likewise the best preserved of the group. It was suggested in the report that a Southwestern influence was responsible for the figure. Five hundred miles separate the Pontotoc County site from Concho County. There are, no doubt, other and identical figures in the adjacent and intervening territory. Climatic conditions are unfavorable for preservation in this region, perhaps accounting for the scarcity of finds.

Pictographs at the Pontotoc County site were made with hematite against a background of white sandstone formation. The figures are more easily seen in a photograph than in actuality. The accompanying figure shows the result of a six-second exposure from a distance of four feet. The initials at the bottom of the plate were made with a piece of hematite recovered from the shelter floor.

H. R. ANTLE
Sulphur, Oklahoma

FIG. 19.—Square-shouldered pictograph, Pontotoc County, Oklahoma.

FIG. 20.—Basket Maker III Sherd.

[1] A. T. Jackson, *Picture-Writing of Texas Indians* Anthropological Papers, Vol. II. *The University of Texas* Page 363.

[2] H. R. Antle, "A Bluff-Shelter Site in Pontotoc County, Oklahoma." *Oklahoma Prehistorian*, March, 1939. Page 6–11.

SQUASH-BLOSSOM HEADDRESS IN BASKET MAKER III

Notations on the discovery of a figure of Kokopelli, the hunch-backed flute player, on a Pueblo I sherd in Chaco Canyon, New Mexico, and speculations on the place of this figure in the prehistoric pantheon, brought forth a series of items of hitherto unpublished and illuminating data. It is hoped that this note on a second find of a human figure on a sherd in Chaco Canyon may likewise lead to some controversy and new information.

This new figure, discovered during the 1937 field season of the University of New Mexico, was that of a woman with squash-blossom headdress, the old fertility symbol of the Hopi maidens. The potsherd was of La Plata Black-on-white, a typical Basket Maker III type, dating probably some time before 700 A.D. Similar figures with the squash-blossom headdress have been noted from time to time as petroglyphs on boulders or on cliff walls in the northern part of the Southwest; but the Chaco sherd provides the best opportunity that I know of for dating this interesting coiffure. With a tree ring date of 777 on a Pueblo I pit house in the Chaco, it seems safe to say that the maiden depicted on the Pueblo II sherd arranged her hair in the squash-blossom style some 1200 years ago. Once again archaeology and ethnology meet.

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THE SERRATED POINTS OF CENTRAL CALIFORNIA

Serrated edges, and wonderful chipping techniques, are commonly displayed on chipped stone objects of the Pacific Coast region from California to British Columbia, but the greatest ultimate perfection of serration obtains in the so-called Stockton type points, peculiar to the delta and flood plain region near the confluence of the Sacramento and San Joaquin rivers. The distribution of these specialized forms seems to approximately conform with this great flood plain, which is, generally speaking, not much above sea-level. This area was called by the early Spaniards the "Tulares," because a great part of it was an impenetrable swamp, covered by a rank growth of tule reeds. Here has been found evidence of several ancient cultures, the latest of which produced

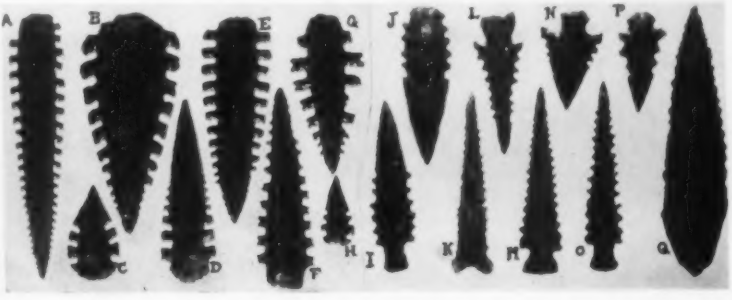

FIG. 21.

the artifacts discussed in this article. On the slight eminences of ground rising at the edges of, and somewhat within this marsh, were the winter village and burial sites of these people, close to an abundant supply of fish, waterfowl, and the now extinct Tule Elk. Called by the early white men "Diggers," and described as low in the human scale of intelligence, these tribes were destroyed by a pestilence or epidemic at an early date, while yet little had been recorded of their culture. Subsequent reclamation of the rich peat land of the marshes was accomplished by the confining of the rivers to dredged channels within high dykes, and many of the former mounds were destroyed by leveling operations, so that much of the archaeological evidence was lost; but what we have reveals a surprising degree of culture, considering the poor report of the early settlers.

As one leaves this great flood plain area, these serrate forms decrease in number and gradually disappear. In all the peripheral areas some serrate points are found, but few approach the perfection of the Stockton type. At Sacramento has been noted the interesting fact that besides the typical local forms without serration, there are also the very same types with the addition of a few Stockton serrations.

Obsidian, the material used in the manufacture of these points almost to the exclusion of all else, is foreign to this territory, the nearest source being near Clear Lake, nearly a hundred miles away, in a territory occupied by other tribes, who undoubtedly capitalized on this as a trade article in prehistoric times. But at this source of obsidian the true Stockton type of serration is absent, proving again that the development of this technique in the delta area is certain. The preference for obsidian lies, no doubt, in the fact that it is a more tractable material for flaking than any other that was available.

For the purpose of discussion, I shall divide the types of serration into three classes, X, Y and Z, designating the Stockton or most highly perfected type as X, the crudest or simplest of execution as Z, and the intervening types, which merge into one another in indistinguishable gradations, as Y.

The distinguishing characteristic of the Stockton type, (X), is that all angles, such as the corners of the projecting "barbs," and also those of the deeply-cut notches or serrations, are square, or right-angled. Of course not every angle is perfect, notably "B" and "C" in Fig. 21 have the "teeth" or barbs projecting slightly downward, distorting the angle somewhat. In such cases, where it is apparent that the maker was attempting the square-cut effect, I have tentatively given him the benefit of the doubt, though it may prove wise to class these separately, as it seems equally certain that he intended the downward projection. In the simplest or "Z" serrations, the serrate effect is secured by the removal of a deep conchoidal chip from each side of the edge at the same point, and repeating this operation at regular intervals, which leaves a sharp projection between each of the notches left by the removal of these flakes. It seems logical to assume that this type of serration, being the easiest and simplest to produce, and being also capable of being accomplished with the use of the ordinary antler and ulna flaking tools, would be the first to be discovered, and therefore the oldest. It is further found in Lillard's "Transitional Horizon," which antedated considerably the later culture which produces the Stockton points in numbers. Specimen "Q" in Fig. 21 came from a mound which produced no arrow points whatever. We must consider the possibility of some of the cruder serration being the work of unskilled individuals, or of one of poor ability, but when we find this type applied to such extremely slender and delicate specimens as "K," "M," and "O"—the manufacture of which obviously required not only a thorough acquaintance with the material but also the exercise of extreme care in manufacture to avoid breakage of the very brittle product—we know that we are not looking at the result of any haphazard luck, but in reality at a masterpiece of fine workmanship.

The "Y" serrations, being narrower and deeper, requiring the removal of one or more additional chips from the bottom of the original notch taken from the edge, would require in most cases the manufacture of a special tool to execute them. And when we come to the ultimate Stockton type, with its deep, narrow notches, we see at a glance that the maker of these serrations required a strong, slender, and finely pointed tool to achieve his purpose. The fact that many specimens—see again "B" in Fig. 21—show many notches larger at their base than at their mouth where the first flake was removed, will prove that such an instrument was actually used.

Captain John Smith, of Jamestown fame, tells us of his Indian, that "for the notch of his arrow, he useth the tooth of ye beaver, wherewith he grateth it by degrees." The California Indian also had beaver teeth, but I have not found evidence of their being used for flaking tools. Whatever evidence I have offered above as to progression in the development of these serration types is not to be taken as conclusive proof, which can only be had after the application of intensive research over a large area, with the examination of and data on thousands of points.

I have spoken of the occurrence of normal types with the addition of serrations. This brings up the question of the reason for these serrations. We of course know of the original purpose of the stone point as promoting efficiency in penetration, thereby increasing killing power. Several writers have already noted that an obsidian point has greater penetration in substances resembling those of the body of an animal, than a point made of steel. Which is really not surprising, as we are all familiar with the cutting qualities of broken glass, which the obsidian point actually represents. But it yet remains for an actual test to be made with such points as are illustrated here. We know that a serrate edge on a bread-knife, for instance, increases the efficiency of this tool, but we also know that no butcher uses his saw to slice meat. It would certainly appear at first glance that some of the deeply serrate points would be impeded rather than assisted by the many breaks in what would otherwise be a continuous cutting edge. But again this is not proven. It is certain that waterfowl were hunted a great deal, and the increase or decrease of penetration by a serrated point through feathers might be checked also.

The widespread occurrence of considerable numbers of points with a rounded top, and with from two to four serrations on each side, such as "C" in Fig. 21, attests the fact that they were undoubtedly utilitarian. One might postulate that these serrations were added to these points to take the place of barbs, to prevent the easy withdrawal of the point from a wound. But here we are confronted with the fact that these serrations are also added to points with most pronounced barbs. It might be interesting here to say that I have found a point similar to "L" embedded in a human breast-bone (sternum), which it had pierced from behind, having passed entirely through the chest cavity.

The probability is that the more ornate and multi-serrate points were never intended for use in the bow. Their extreme fragility is the best argument against them. The peculiar butt of many, such as "E," may point to some special type of hafting. Rogers tells of finding arrow-points drilled for suspension on a necklace in the Santa Barbara region, and they may have been carried as charms or other forms of decoration. In my investigations at what is known as Hotchkiss Mound, near Knightsen, California, I have found few of the really unusual specimens associated with burials, though they were certainly all within the limits of the burial plot, which occupied only a relatively small part of the mound. I would like to add here that this mound has never yielded any trace of contact with the white man. This occurrence in a burial area may point to some ceremonial use, perhaps in connection with offerings at a mourning ceremony, such as is known to exist in other California areas. Father Crespi, returning from San Francisco

Bay with Portola in 1776, relates that at Monterey "the land party found the second cross they had erected standing as they had left it; and lying about its base were numerous contributions of fish, seeds, meat and clams, which the Indians had placed there, the whole being surrounded with arrows, thrust into the ground, points downward." It appears that if the points had been personal property, they should be found more frequently associated with burials. But as before noted, I myself have not found enough of them so definitely associated to afford grounds for more than a suspicion that they might be, for instance, shamanistic property. With two male burials there were actually associated with unusual serrate points, other articles which might be so classed, viz.: numerous whistles, bear's teeth, small stone mortars. With the Indian, anything unusual or outstanding was generally considered to have supernatural power, and the man who could manufacture one of these points might easily have claimed such power. Some not-far-distant tribes had arrow-makers who specialized in this branch of activity.

Though we know little about these extraordinary artifacts, we do have them in considerable numbers, which fact in itself suggests that there may be a reason, perhaps to be found in some condition peculiar to the region where they are found, for their development.

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A BARBED BONE PROJECTILE POINT FROM UTAH

In view of the fact that barbed bone "projectile" points are extremely rare in the Southwestern archaeological area and because such artifacts have a generally northern and arctic distribution in North America, the present specimen from Utah is offered in the hope that other material of a similar nature from the Southwest may be published and that, perhaps, someone may be attracted to the elucidation of the problems implied. The present writer is unaware of other published specimens of bone projectile points from this area, although, of course, bone artifacts of several other types are fairly numerous.

The present specimen was recovered in the summer of 1937 by the Peabody Museum-University of Utah joint expedition, of which the writer was field director.[1] The point was found at a site, near Ephraim, Utah, locally known as Witch's Knoll. The sides and the top of the knoll were covered with house remains of several different types and the present specimen was found associated with a unit-type, rectangular, two-room house with adobe walls (House 6). Not only the architecture, but the other artifacts seemed to place this structure in the "Developmental Pueblo" phase of the Northern Periphery. The house was oriented with its long axis northwest-southeast and the smallest room (Room I) occupied the western part of the structure. This room seemed to have been imposed on an earlier structure, the floor of which lay some eleven inches below the floor and wall bases of Room I, which was practically square (5 feet 7 inches on a side) with standing walls averaging 2 feet 7 inches above the floor and 9 inches in thickness. Room I had a floor of hard adobe averaging 2 inches in thickness, and immediately under this adobe floor was a paving of thin shale slabs, averaging ¼ inch thick. Under this paving was a cultural stratum averaging 11 inches in thickness at the bottom of which occurred another, harder stratum, 3½ inches in thickness.

It was assumed that the latter hard stratum represented the floor of an earlier house

[1] A full report of the results of this expedition will be published in the Papers of the Peabody Museum.

or habitation site which had been destroyed before the erection of the adobe-walled house above it. Excavation revealed no structural remains of the earlier structure. The bone point herewith illustrated[2] was found in the eleven-inch-thick cultural stratum lying above this early occupation floor and below the paving of thin shale underlying the adobe floor of Room I. Thus, although the bone point appears to be earlier than Room I, the pottery fragments which were plentiful in the same underlying cultural stratum show no significant differences when compared with those found above the floor of Room I of the unit-type house, all being of the "Developmental Pueblo" type common to this region. On the basis of the evidence at hand, we therefore associate the bone point with the Developmental Pueblo culture of the adobe-walled unit-type house.

The point is 114 mm. long and of an irregularly cylindrical cross-section which averages 4 mm. in diameter. Two barbs have been carved from the bone, each rising 3 mm. from the surface. A series of narrow, short, transverse incisions decorate the artifact, beginning 42 mm. from the butt and ceasing 7 mm. from the point.

It has long been assumed that the Pueblo-type culture of the Northern Periphery, which seems to have been suddenly eliminated before reaching the Classical stage of development (Pueblo III), must have succumbed to attacks or movements of outsiders, presumably nomadic tribes, and the Uto-Aztecan-speaking tribes historically in possession of the area have been suspected, although to date we have been unable to "pin" anything on them in the shape of archaeological evidence of their influence on the Pueblo

FIG. 22.

peoples of the region. Likewise the possible northern, nomadic, hunting connection of the Pueblo occupants of the Northern Periphery has been subject to speculation. No attempt to interpret these matters in the light of the present bone point is made, but it is suggested that a follow-up of this type of evidence might shed some interesting light on the cultural problems of the Northern Periphery, if not of the Southwestern archaeological area as a whole.

JOHN GILLIN
The Ohio State University
Columbus, Ohio

[2] Photographed by John M. Longyear III at the Peabody Museum, Cambridge, Mass.

CORRESPONDENCE

METHODS OF POTTERY MANUFACTURE

During the past year, the writer has been investigating the subject of pottery-making methods, both extinct and extant, in North America. The Northeastern area received particular attention, because it was opportune to examine sample material in conveniently accessible collections. The results so obtained, combined with those of previous studies, show that data for the pertinent technologic studies are quite abundant. Insofar as the Northeastern area proper is concerned, it appears that both in pre-white and post-white times, the construction methods were fairly homogeneous. Perhaps the most commonly used mode of building a vessel was by modeling, in which the potter fashioned the receptacle out of a single lump of clay, usually without resort to additional supply. Of the segmental methods of construction, which comprise the annular variants (circuit and ring), on the one hand, and true coiling, on the other hand, only circuit building and coiling are demonstrated by positive evidence in various sections of the area. True coiling, *i.e.*, that method of construction which depends upon tectonic components in the form of fillets carried on the course of a superimposed spiral, is demonstrated in scattered, yet significant instances. The circuit variant of the annular procedure, so frequently, though erroneously, interpreted as "coiling," appears to have the widest distribution, as well as a most persistent survival. In contrast, the ring variant of the annular method, classically represented at Catawba, seems to be confined to a small geographic locus in the Carolinas; the Northeastern area proper seems to be devoid of the ring variant. Insofar as possible occurrence of the molding construction in the Northeastern area is concerned, dependable evidence is lacking. Farther west, of course, such a practice was known (*cf.* Fewkes, 1937).

On the basis of the work thus far accomplished, the following classification of *strictly manual* building methods of constructing pottery vessels may be suggested. Broadly speaking, two possibilities exist: (1) modeling, wherein the potter produces the vessel by direct shaping from a lump of paste, without necessarily using any additional material; (2) segmental building, wherein the potter uses one or more tectonic components, either in the form of a fillet or of a morsel, depends on a course procedure, and uses additional paste as the desired vessel grows.

The methods of segmental construction may be classified as follows:

I. Methods depending on fillet components.
   A. Annular procedure.
      1. Circuit variant.
         a) Single fillet. (Examples: Modern Pueblo, *cf.* Guthe, 1925, p. 33, and modern Catawba, Fewkes, MS.)
         b) Composite fillet. (Example: Modern Yuma, *cf.* Rogers, 1936, p. 9.)
      2. Ring variant. (Example: Modern Maya, *cf.* Thompson, 1934, p. 95, and modern Catawba, Fewkes, MS.)
   B. Coiling.
      1. Single (?) fillet. (Example: The alleged method of the 18th century Natchez, *cf.* Butel-Dumont, 1753, II, pp. 271 ff.; this is a dubious case.)
      2. Linked (chained) fillet. (Example: Anasazi corrugated ware, *cf.* Kidder and Shepard, 1936, pp. 386 ff., 440 ff., and 552 ff., and modern Cherokee, Fewkes, MS.)

II. Methods depending on morsel components. (Examples: modern descendants of the Gay Head Indians, Fewkes, MS., and some of the free hand, *i.e.*, *not molded*, archaeological ware of the Woodland, *cf.* Fewkes, 1937.)

The writer will be grateful for information about pottery technique anywhere on this continent, whether the data be of archaeological or ethnological interest. Address the University Museum, Philadelphia, Pennsylvania.

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ARCHAEOLOGICAL FRAUDS FROM SOUTHERN COLORADO

At or near Springfield, Colorado, in the "Dust Bowl," passable Folsom and Yuma points are being manufactured. These are being "unloaded" on local collectors and tourists at various towns along the Arkansas Valley, particularly around Lamar. At least one trip is reported to have been made through the Middle West, peddling these manufactured points to museums and collectors.

The usual materials are a dolomite known from West Texas and a grey to black obsidian, source unknown. The flaking is not so precise as in the best Folsoms and Yumas, but is comparable with many authentic specimens of fair workmanship. The freshness of flaking and the thickness of the points are the only dependable checks. Seen with a group of authentic points they may be detected more easily.

Near Crestone, Colorado, the Highway Department is now operating a rock-crusher in a gravel deposit, probably of glacial origin. Among these gravels W. P. A. workers are "finding" engraved stones, large flat pebbles with lightly incised markings on one or both faces; total number "found" unknown. Designs used include a tipi, a "birch-bark canoe," and a left profile "Indian head," with two drooping feathers in the hair—an approximate reversal of the design on the Indian-head five-cent piece. These designs are, of course, completely foreign to the aboriginal art of the region. Some of the engravings have been aged, either by burying with scrap iron or in an iron spring, others are obviously fresh. The "find" is being publicised locally, probably with a view to unloading on the summer crop of tourists.

BETTY HOLMES HUSCHER
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NOTES AND NEWS

ARCTIC AREA

Dr. Froelich G. Rainey of the University of Alaska spent the past winter at Point Hope on the Arctic coast making ethnological studies of the Eskimo. In June excavations were resumed at Ipiutak, the old Eskimo site at which Rainey and Helge Larsen made such interesting discoveries in the summer of 1939 (see AMERICAN ANTIQUITY Vol V, no. 3, pp. 233—234). By August 4th, twenty-three houses had been excavated and large quantities of cultural material obtained. The site is notable for the absence of such typical Eskimo features as pottery, lamps, sled runners, ice picks, and slate blades. On the other hand, implements of chipped stone are abundant and many of these, as well as those of ivory and bone, are unique. The style of decoration and some of the implement types indicate relationship with the early Eskimo culture represented at the "Oxfik" (Old Punuk) site on Punuk Island and the Old Bering Sea site at Gambell, St. Lawrence Island.

An intensive search for burials resulted in the discovery of a number of skulls and nearly complete skeletons and of cultural material which adds to the interest and complexity of the archaeological picture. Some of the burials were accompanied by pure Ipiutak material. With others were found new forms of implements and ornaments—harpoon heads; small, very thin diamond-shaped blades of chipped flint; arrow heads with minute flint side blades; and elaborately carved ivory link ornaments. Small middens were also found which yielded pottery and flint but no slate. (*H.B.C.Jr.*)

NORTHEASTERN AREA

The second season of the Hudson Valley Archaeological Survey, operating under the auspices of Vassar College through a grant from the Carnegie Corporation, closed August 31, 1940, after seven weeks of excavation. The field party, consisting of eight men and four girls under the direction of Dr. Mary Butler of the University of Pennsylvania Museum, assisted by Carlyle S. Smith of Columbia University, worked this year in the lower Hudson, testing four sites in southern Dutchess County, fifteen in Westchester, three in Orange, and two in Ulster County. Three of these sites were rock shelters ten to fifteen miles back from the river, the rest were camp-sites, most of them marked by shell-midden top-soil.

The season's finds included a ground slate knife fragment on a camp-site in Westchester County, a bone fish gorge in a rock shelter in Orange County, and definite differences in material culture between the oyster-eaters of the Lower Hudson and the mussel-eaters who lived above the salt-water range of that river.

During the month of July, the Rochester Museum of Arts and Sciences continued the excavations on Frontenac Island, Cayuga Lake, New York, which were briefly described in the October, 1939 and the January, 1940 issues of this journal (Notes and News). A party of four students, under the active direction of William A. Ritchie, uncovered sixty-five fully extended, flexed, cremated, and aboriginally disturbed burials, bringing the total for the site to one hundred fifty-nine. Although distributed over the whole island (of about an acre in extent), they were often closely grouped, making possible the demonstration of contemporaneity of all varieties of interment.

Grave goods consisted of bone harpoons, fishhooks, daggers, long flutes or whistles, awls of many kinds, wolf jaws with deeply ground bases, scores of gorges, a unique

antler spoon and cup made from the base of a large elk antler, perforated bear and elk teeth, flaking tools, conch shell pendants, plummets, projectile points of several styles, and various other traits, of types identical with those from the refuse in which the burials occurred. Here also were recovered a stone gouge, ground slate point, bannerstone (the last two found on the island as grave goods with extended burials in 1939), native copper awls, adzes, celts, drills, scrapers, metates, pestles, etc., to mention only the most important.

The total complex appears to be a composite of Archaic and Laurentian traits and is now being analyzed for occurrence and typology. The crania, too, are being restored and measured.

From the superficial mantle (surface to about 10 inches), stratigraphically indistinguishable from the deeper refuse deposits covering the island, came Woodland pottery, steatite vessel fragments, triangular and semilozenge-shaped points, the latter often of exotic rhyolite, non-regional jasper chips, a pipe, bolas stone, bone beaming tool, etc., traits entirely absent from the older levels. A few flexed and cremated burials believed to pertain to this culture, which awaits definite identification, were also found.

Dr. C. E. Schaeffer, newly appointed Assistant Anthropologist of the Pennsylvania Historical Commission, reports that "the Commission has under consideration a WPA archaeological project for Pennsylvania to include the preparation for publication of materials from previously excavated sites, and salvage operations in certain areas threatened by flood-control projects." (*W.A.R.*)

SOUTHEASTERN AREA

During the summer of 1940 a Columbia University-National Park Service Field Party carried out an Archaeological Field Survey in west Florida. This party was composed of Gordon R. Willey and Richard B. Woodbury, both students in the Department of Anthropology, Columbia University. In this period over 70 sites were located and surface collections were made from all. Six sites were excavated stratigraphically. A preliminary report is now in preparation. (*G.R.W.*)

SOUTHWESTERN AREA

Of three Mogollon digs in progress last year, only one has continued through the present season. Dr. Emil Haury, working at Forestdale, near Showlow, for the University of Arizona, has uncovered late Basket Maker pithouses and a pueblo with what appears to be a great kiva of the Pueblo III period in this region. From the time of the earliest sites here to that of the prehistoric Apache campsites farther down the valley, is an interval of 900 years of continuous habitation. During this long occupation of the valley, the creek has changed its course at least three times; at present moving away from a channel which cut away half of the great kiva.

One of the most interesting peripheral areas in the Southwest is the Colorado river region between Arizona and California. As far as the writer knows, the first public account recognizing the archaeological distinction of this region, and calling it Yuman, was written by the Gladwins in 1930. This was followed by their 1934 report which amplified their views, as based on the original survey.

Malcolm Rogers, working through the San Diego museum, writes that he has made a survey of southern California and contiguous areas, which was begun in 1920. The western third of the state of Arizona was included, as this area was involved in the cultural

problems lying within the Colorado River Valley. Although surveys of the California and Nevada sides of the river were completed in 1936, the Arizona side, after the completion of the survey of Yuma County and one half of Mohave County, had to be left unfinished. That part of the work concerned with the Yuman ethnographic area has been recorded in the Museum's papers, No. 3; 1939.

In 1938 the Museum of Northern Arizona began work in the northern portion of this area, which they have called the Cohonina branch of the Patayan culture. This was further evaluated and reported in 1939. The most interesting result of all this work is that it has pointed out that the culture of this area is distinct from others of the Southwest.

During the past year the activities of Gila Pueblo, as reported by Gladwin, have been as follows: "E. B. Sayles has been working on the Cochise and Mogollon problems, with excavations and survey, and reports are now being prepared. Deric Nusbaum has carried on a survey in northern central Mexico attempting to define the relations between Mexico and the Southwest. Both Sayles and Nusbaum have made extensive additions to our collection of modern and prehistoric wood. Mr. and Mrs. J. H. Denison Jr., Miss Susana Burkhard and I have been working on the analysis of tree-rings and preparing reports on the methods employed."

Dr. C. T. Hurst writes that the 1940 field expedition of the Museum of Western State College of Colorado, Gunnison, to Tabeguache Cave, under his direction, closed August 18 after a most successful season. This work was a continuation of that done in the same cave last summer. At least one more season of work will be necessary before the complete pattern of the site can be established. The 1940 work forged more links into the chain of evidence regarding the nature of the site, and some interesting conclusions will be forthcoming. The cave was a Basket Maker site. Relationships to the San Juan country are slowly becoming apparent, and dates will no doubt be worked out. The Tabeguache country is peripheral, and as such, may prove pertinent in contributing data to the answers to some puzzling questions.

WPA work has reached the stage where with few exceptions, it consists mostly of laboratory evaluation and such activities as construction of museum exhibits. Odd Halseth writes: "Our WPA archaeological project has continued with some new digs in trashmounds, but most of the work has been in the laboratory, finishing up work on last year's digging and bringing unfinished drawings and notes up to date.

"The only dig at the present time is a stratigraphic test of the big mound at Pueblo Grande, where our original theory that these mounds were used as public granaries and were never more than a single story (Casa Grande Compound *A* being a notable exception) is receiving archaeological support.

"Although any summary of the stratigraphic work in the Salt River Valley would be premature at this stage, some indications of interest appear quite pronounced; especially the indications that the earliest occupation in this valley started during the Gila Butte and Santa Cruz stages, (when many of the Gila Valley trashmounds stop), indicating that canal irrigation became sufficiently developed between 500 A.D. and 700 A.D. to make farming possible on the upper river terraces, and thus utilize the Salt River Valley, which had no lower flood-plain terrace as did the Gila River where irrigation probably developed from the inundation stage. It also seems fairly clear at this stage that the greater part of local development took place during the Classic Period, or between 1200 A.D. and 1400 A.D." (*J.C.McG.*)

PACIFIC COAST AREA

Mr. Malcolm J. Rogers writes that the San Diego Museum has been inactive as regards archaeological undertakings, having completed the survey of the territory originally contemplated. Any future work would be deep excavations of certain sites which would have to be financed by grants-in-aid. A brief summary of Mr. Rogers' work in the Colorado River region will shortly appear in AMERICAN ANTIQUITY.

The Washington State Museum and the Department of Anthropology have been cooperating with the Spokane Public Museum in an archaeological survey of that part of the Columbia River Basin which is being flooded through the completion of Coulee Dam. The digging in this survey is being done as an NYA project, and the work has been in progress since last August. While the results have not been satisfactory in the quantities of material, they have been very good as a cultural study. The project was first directed by Dr. Philip Drucker, and is now in charge of Dr. Alfred Hudson of the Department of Anthropology, University of Washington. The work will definitely continue until the end of September.

Dr. L. S. Cressman writes that the major work of the Department of Anthropology of the University of Oregon during 1940, carried out in the Lower Klamath Lake region, involved (1) the association of artifacts and fossil fauna (horse, camel, elephant, etc.); (2) the determination of cultural horizons in the lake basin; (3) the establishing of a chronology.

There are two distinct horizons; one associated with the fossil fauna, and an historic one represented by cultures found along the old lake shore and on islands. It is possible that the earlier horizon should be subdivided into two phases, the second phase represented by a distribution of projectile point types slightly different from that occurring in the areas of faunal association. The characteristic point of the area of faunal association is a crude, willow leaf point, frequently with one flat side and a prominent dorsal ridge on the opposite surface; some are found with a straight base with side notches. In the area in which a possible second phase of this earlier horizon occurs, the proportion of these points is reversed. Fossilized long bone projectile points, pointed at one end and bevelled at the other, similar to those found by Howard at Clovis, and apparently lacking in the possible second phase, have been found in the earlier horizon as have both Folsomoid and Yuma points.

The time represented by the earlier horizon, would be before the Little Pluvial which started about 4000 years ago. The historic horizon would be some time after the lake became filled and then reduced to its modern level, probably in the period subsequent to the beginning of Christian time. These determinations are based upon studies of abandoned beaches and geological formations.

Climatological and geological aspects of the problem were studied by Dr. Ernst Antevs of Globe, Arizona, Dr. Ira Allison of the Department of Geology, Oregon State College, and Dr. Warren D. Smith of the Department of Geology, University of Oregon. The project was financed by funds from the Carnegie Institution of Washington through Dr. John C. Merriam for his research on Early Man, the American Philosophical Society, Philadelphia, and the General Research Council of the Oregon State System of Higher Education.

This has completed the systematic examination of the northern Great Basin region in southern Oregon, from the northern extension of Lake Lahontan to the Klamath Basin

on the west. This has shown the association of Early Man with extinct horse, camel, bison, and other mammals, and a development of arts and crafts, especially basketry, superior on the archaeological horizons to the historic products in that area. Basketry from the Catlow Cave area on the west side of Steens Mountain has indicated relationship; (1) with the Plateau and British Columbia, and (2) westward through the Klamath-Modoc area, Pit River, to the Wintun area of north central California.

The program of the Department of Anthropology calls for extension of the work through the north central part of the state, by way of the famous Fossil Lake locality.

The problem of the Lower Klamath Lake was originally recognized by Mr. Frank A. Payne of Klamath Falls, who has systematically collected in the area for ten years.

(*E.W.G.*)

MIDDLE AMERICAN AREA

Dr. A. V. Kidder writes of the work of the Carnegie Institution during 1940:

COPAN: Mr. Gustav Stromsvik continued excavation and repairs at the acropolis, resetting balustrades and steps of the hieroglyphic stairway, and setting those steps whose position was not definitely known in such a way that there can be no danger of confusing them with the intact lower elements. This will preserve the steps for future study and restore the stairway to its former appearance. His excavations in the two temples flanking the ball court secured information which will permit at least a partial restoration.

YUCATAN PENINSULA: Mr. H. E. D. Pollock and Mr. E. M. Shook spent four months in the region south and east of that part of the so-called Puuc area which they had examined in former years, working south from Maxcanu along the Campeche railroad line, and striking eastward into the hills or occasionally westward onto the coastal plain. About a month was spent at the ruins of Oxkintok just outside of Maxcanu, known to be large and of strategic importance, with a lintel carrying the earliest Initial Series in northern Yucatan (9.2.0.0.0.). The ruins were found to include two types of remains; the first, akin to southern Maya in assemblage of buildings, architectural style, structural details, and association of inscribed monuments (the lintel was *in situ* in a structure of this class), the second, assumedly later, of typical Puuc tradition. In general, the earlier remains tend to cluster in the central part, the Puuc remains to be outlying, with a certain number of structures near the central part of the site.

The second part of the season's work was concentrated in the Cumpich-Sculoc-Halal, region east of the railroad station of Hecelchakan, where some twenty sites, varying widely in size and importance were visited. Broadly speaking, the remains are akin to the ruins in the savannah of Xcalumkin—similar to the architecture of the Puuc, but distinctive in a sufficient number of details to justify their being set apart from the ruins of that area. As in the case of Oxkintok, a considerable amount of hieroglyphic material and stone sculpture was discovered and in addition some fragmentary examples of wall fresco were found.

Some twenty sites along the railroad and east of the rail line between the towns of Pomuch and Hampolol were visited during the third and last part of the season. In the main, the remains are in the same tradition as those of the area surveyed on the preceding trip; exceptions being noted at Bakna, northeast of Bohola, where there are traces of the early style architecture of Oxkintok, and at Acanmul, near Hampolol, where groupings and relatively high pyramidal structures set the ruins off from the majority of the region. During the final week a visit to Oxkintok was made to check certain important details.

The ruins of Siho, west of Halacho, were visited at this time. The survey also made a brief examination of the ruins of Acanceh and Mayapan, long known, but inadequately studied. It should possibly be noted here that the Acanceh ruins are striking in their similarity to relatively early southern ruins.

The explorations of Mr. E. W. Andrews in Campeche and Chiapas along the route to be followed by the new Mexico-Yucatan railroad line, located a great many hitherto unknown sites, most of which contained little or no standing buildings but which indicated a very dense aboriginal population.

UAXACTUN: Mr. A. L. Smith and Mr. E. M. Shook spent a week at Uaxactun checking up on various points which have arisen during preparation of the final report upon the Institution's many years of excavation at that site. They also conducted a few minor excavations.

SAN AGUSTIN ACASAGUASTLAN: Mr. A. L. Smith devoted several weeks to mounds at San Agustin, excavating a multi-chambered temple structure and opening two vaulted tombs which yielded large amounts of very beautiful pottery. The tombs appeared to have been kept in use for considerable periods as there was evidence that they had repeatedly been opened and fresh interments made in them. At the conclusion of his excavations Mr. Smith surveyed the valley of the Motagua river for a considerable distance both above and below San Agustin; finding an extraordinarily large number of mounds which appeared to belong to a well-defined local Maya culture of the general Old Empire period.

CHICHEN ITZA: Dr. George Brainerd spent some months at Chichen Itza studying the ceramic collections made in former years at that site and those gathered by the Architectural-Ceramic survey at Cobá in western Yucatan and at a number of sites in the Puuc. Miss Tatiana Proskouriakoff was also at Chichen Itza engaged in gathering materials for restoration drawings of various structures and groups of buildings. She made similar studies at Uxmal, Labna, Kabah, and Sayil. Mr. E. T. P. Kennedy conducted minor excavations at the Temple of the Cones.

A joint expedition of the National Geographic Society and the Smithsonian Institution under the leadership of Matthew W. Sterling continued researches early this year in the coastal region of southern Vera Cruz and western Tabasco. After making some further excavations at Tres Zapotes, Vera Cruz, where some spectacular discoveries had been made in 1939, the site of Cerro de Mesa, between Tres Zapotes and Vera Cruz City, was visited. Twelve stelae and eight other carved monuments were located here, including one with an Initial Series date, the northernmost point at which one has yet been found. The expedition then moved to the site of La Venta in far western Tabasco. Five more colossal stone heads like those found last year at Tres Zapotes were uncovered as well as a number of altars and other monoliths, including a stela fourteen feet high. These latter are decorated with some of the most admirable carving in low and high relief ever found in pre-Columbian America, free and naturalistic. In all, twenty sculptures were found. The culture is ascribed to the Olmec. Mr. Sterling has published a popular account of the results, entitled: "Great Stone Faces of Mexico" in the National Geographic Magazine, 78, 3, September, 1940.

Dr. Mary Butler, of the University of Pennsylvania Museum, spent a second field season from January to May, 1940, in Guatemala, continuing the archaeological survey of the Alta Verapaz that was started in 1939 and financed throughout by a grant from the American Philosophical Society.

This year's field work was carried on at the site of Chamá on the Rio Chixoy, one of the tributaries of the Usumacinta, in the hope of checking by stratigraphical excavation the ceramic sequence already established from study of material dug there in the past by Robert Burkitt and E. P. Dieseldorff. Outstanding results were corroboration of the basic features of this sequence through evidence that included a late tomb with plumbate ware and carved jades, an early stone cyst cemetery, and an early tomb with polychrome vessels strengthening the connection between the Alta Verapaz and the Peten, and containing a central marker under which lay an offering of a polychrome cylinder jar and layers of iron pyrites mirrors.

Dr. Butler will work this winter on a report of the survey to date.

Mr. Theodore Morde made a preliminary survey in Honduras for the Museum of the American Indian, Heye Foundation; it is hoped to follow this up with a fully equipped expedition.

The Peabody Museum of Yale University, the University of Chicago, Field Museum of Natural History, and the National Museum of Washington specifically reported no archaeological research done in Middle America during the past year.

The University of California reports that Dr. Isabel Kelly has spent the last year and a half in residence in Mexico, Until about June, 1939, she made a reconnaissance survey in Jalisco and Colima. About February and March, toward the end of the dry season, she went back to Colima and excavated. In the balance of her time she has been working up her results. (*J.A.M.*)

BOOK REVIEWS

Indian Arts in North America. GEORGE C. VAILLANT. (Pp. xiii, 63; 96 full page plates. New York: Harper and Brothers, 1939.)

This important work is concerned with the arts of the tribes north of Mexico in both prehistoric and historic times. There are some fifty pages of discussion of the subject from several angles; and ninety-five black-and-white plates, about 9 by 6 inches, of objects selected to give some idea of the range of materials, techniques and design styles in the area. There is a frontispiece in color, a good bibliography, but no index. However, the character of the work and the presence of a full table of contents make an index rather unnecessary.

Despite the many excellent points of the book, to be mentioned later, it is more important for the trend or movement which it symbolizes than for its content. The movement, of which this book is the first good substantial evidence, is that of paying some intelligent interest to the task of bringing to the public—and to many anthropologists—some conception of the immense artistic riches to be found in the crafts of the Indians north of Mexico. The work of the Indians south of the border has long been given attention and appreciation; but, except for a few prophets crying in the wilderness, few have paid much attention to the products of our own tribes. Furthermore, the many existing books describing Indian manufactures are usually concerned with their scientific value only and pay little or no attention to their aesthetic aspect.

Vaillant has approached the difficult task of making a first presentation of the subject with much skill and good sense. He begins the text with a reasoned but stirring call for realization of the largely untouched wealth in Indian art; and for the potentialities for good to our nation and civilization which lie in this body of art. From this he proceeds to an excellent, simple analysis of the character of Indian art; and to the effect on this art of the diversity of Indian life in all its phases.

A survey of the main characteristics of Indian art by culture areas, in both ancient and modern times, is preceded by a chapter on the origins of Indian culture which ends with an eloquent plea for the preservation of Indian art as a part of our nation as basic as its natural beauties. The survey by areas is keyed to the plates by references to those pertaining to each. There is, finally, a brief appraisal of Indian art by such major divisions as design, sculpture, and so on. The chief difficulty about this section, indeed about the whole textual part of the book, is the impression it gives, perhaps not with intent, that Indian art is pretty much a thing of the past, a sinking ship from which a few timbers may perhaps be salvaged. This is not the place to argue with this idea, but arguments can certainly be made against it!

The text of the book is conservative in tone and, of necessity, general in treatment. But the basic ideas are so clearly and strongly presented that the brief text is a real milestone in the study of Indian art. There is a welcome absence of any sentimentality and dubious special pleading.

The ninety-five plates which make up the possibly most important part of the book were selected from some nine hundred photos taken by Konrad Cramer on a tour of most of the great anthropological museums. The task of choosing ninety-five pictures from this huge collection must have been a staggering one. The task has been well carried out on the whole, though it is difficult to agree in any way with some of the choices. Unfortunately the actual plate making is far below the quality of the rest of the book, for all too many magnificent specimens are illustrated with blurred and muddy plates. This bad quality is not the fault of the photographer.

The arrangement of the plates is excellent. First come thirty-seven plates devoted to archaeology and then fifty-eight in the ethnological field. Each section is divided by culture areas and the plates for each area are preceded by a page discussing the basic characteristics of the civilization in each area and showing its location on a map. Full descriptive data are given for each specimen. There is also a time chart showing comparative history in various areas of North America and a map of house and food types which is rather useless because of the smallness and indistinctness of the pictures.

Despite its faults, which are far outrun by its virtues, this is a very good book, of much importance, for the making of which Vaillant deserves great credit. It is to be hoped that it is but the forerunner of many equally good books on the many phases of the subject.

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Denver Art Museum

"Excavating the Site of Old Fort Ridgely." G. Hubert Smith. (*Minnesota History: A Quarterly Magazine*, The Minnesota Historical Society, Vol. 20, No. 2, pp. 146–155, 2 plates, June, 1939.)

Mr. Smith, foreman-archaeologist in the project of the restoration of Fort Ridgely, Minnesota (1853–1867), gives a brief account of the history of the fort, and of the operations of exposing and partially restoring the walls and foundations of the principal buildings, whereby a field of sod-covered mounds became intelligible to the public as a frontier fort. This paper is timely in view of similar restorations of early towns, trading posts and forts now in progress or but recently completed by various state and federal agencies. These projects are of interest to archaeologists as affording data on the historical approach to archaeological problems, as exemplified by Mr. Smith's report of evidence of a protohistoric Indian occupation of this site.

L. A. Wilford
Minneapolis, Minnesota

Geologic Antiquity of the Lindenmeier Site in Colorado. Kirk Bryan and Louis L. Ray. (Smithsonian Miscellaneous Collections, Vol. 99, No. 2.)

The authors have thoroughly capitalized a remarkable opportunity of dating a prehistoric culture in a very detailed and convincing manner. The site is

in the bottom of a small east-flowing valley which has been beheaded and breached by the headwaters of more rapidly growing south-flowing streams. In this physiographic history, episodes are so recorded by valley grades, terrace levels, and captures that dating in terms of geologic events becomes possible. Furthermore, the later episodes of the physiographic history can, through correlation of terraces, be linked to the later episodes of Pleistocene glaciation of the mountain mass. This furnishes a chronology, which if correctly interpreted, may give a basis for dating the Lindenmeier site in a world-wide chronology. In this way the authors have painstakingly correlated the culture layer with the Kersey terrace of eastern Colorado, which is the equivalent of the No. 4 terrace of the Cache La Poudre River, which in turn is the outwash valley train of the Corral Creek substage of glaciation. The authors think this stage of the mountain glaciation is equivalent probably to the Late Mankato stage in the Mississippi Valley region and the Pomeranian substage in northern Europe. Estimates place this stage as about 25,000 years ago.

The authors are frank to point out the dangers of long range correlation but are entirely convincing in estimating the antiquity to be older than 10,000 years and probably nearer to 25,000 years. To the geologist the paper is the most important one yet published on dating an ancient site.

PAUL MACCLINTOCK
Princeton, New Jersey

The Jones Pond Shell Heap; An Excavation by the Narragansett Archaeological Society of Rhode Island. JOHN C. BROWN. (26 pp. 13 plates, 4 figures, Woonsocket, 1939, 50 cents.)

The recently-formed Narragansett Archaeological Society has tackled with interest and zest the archaeological problems that face it. The Society is to be congratulated on its work and its report; the "dig" was carried on by the members and the report was privately printed with funds raised for the purpose. Having decided to undertake a systematic excavation in order to secure unimpeachable evidence, the members of the Narragansett Archaeological Society set to work in a painstaking manner to get all the available data. The result is the first documented and carefully described site from the district, to the reviewer's knowledge. For the first time we have specimens supported by something more than the name of the collector and hearsay evidence.

In the report of the Society's excavation, Mr. Brown has given a very creditable account of the efforts of the group. He describes the site, its constituent elements and features, and proceeds to consider the specimens unearthed. It is noteworthy that a hint of two periods of occupation is given by the distribution of types of pottery and stone artifacts. While clear-cut stratification is not proven, here is another suggestion to support existing tenuous stratigraphic evidence that more than one cultural horizon may be found in New England. In this connection it is to be regretted that an intrusive layer of

clean sand was not fully described or completely traced. If it was deposited by a flash flood following a heavy thunderstorm, its importance as an interval marker is not as great as it would be if the deposit were the result of a more gradual accumulation. This might, perhaps, be the key to the separation of the site into two horizons.

On the whole, the report is well gotten out. The figures are clearly drawn and perfectly legible. It is to be regretted that the order of the half-tones is somewhat mixed, but this is a small criticism of what is otherwise a good piece of work. It is to be hoped that other archaeological societies in the east will take an equally responsible view of their work and opportunities.

DOUGLAS S. BYERS
Andover, Massachusetts

Plantae Mexicanae II, The Identification of Teonanacatl, a Narcotic Basidiomycete of the Aztecs. RICHARD EVANS SCHULTES. (Botanical Museum Leaflets, Harvard University, Vol. 7, No. 3; 37–54, 1 plate, Cambridge, February 1939.)

In this paper Mr. Schultes describes the use of narcotic mushrooms in the daily life, witchcraft and divination of the Mazatec Indians of Oaxaca, a subject to be treated more at length by Jean Bassett Johnson in the *American Anthropologist*. Mr. Schultes identifies these mushrooms as belonging to the widespread genus *Paneolus*, and reports similar materials from the Otomi of Puebla. After a thorough review of the literature, he concludes that the Teonanacatl or sacred mushroon of the Aztec, described by Sahagun and others, was probably a species of mushroom belonging to this genus. This corrects a previous attempt by Safford to associate the Aztec mushroom with the peyote cactus. Those interested in the use and distribution of narcotic plants will find Mr. Schultes' discussion and bibliography useful.

The task of the Ethnobotanist is the correct identification of botanical materials of interest to Anthropologists. It is regrettable that there is no recognized system whereby he can indicate the relative validity of his identifications. For example we find in this paper

1. A complete identification of one form based on adequate specimens.
2. An incomplete identification (to genus only) based on inadequate specimens.
3. A suggested identification of materials known to be similar in appearance and use to adequately identified materials.
4. A suggested identification of a description made three and a half centuries ago.

All of these are welcome, justifiable identifications but with quite different degrees of reliability.

ALFRED F. WHITING
University of Chicago

Plant Collecting Manual for Field Anthropologists. F. R. FOSBERG. (American Fiber-Velope Mfg. Co., Botanical Supply Dept., 229–233 N. 63rd Street, Philadelphia, Pennsylvania. 35 cents.)

Much information of value to Botany and Anthropology has been needlessly lost because the plant specimens collected by Anthropologists are all too often of such poor quality that they can not be satisfactorily identified. In this brief manual the author has undertaken to provide the field Anthropologist with the necessary knowledge of the methods of collecting and preserving plant specimens. The result is highly successful. The directions are clear, precise and reasonable. The author obviously speaks from a wide experience and includes many suggestions of use to all who collect plants. A sympathetic sense of humor helps to lighten a notoriously dry subject. This leaflet is strongly recommended to all those who may at any time wish to collect specimens which they would like to have a botanist identify.

Might one suggest a companion volume on Ethnological Method for Botanists?

ALFRED F. WHITING
University of Chicago

The Chilton Site. W. D. FUNKHOUSER and W. S. WEBB. (University of Kentucky Reports in Archaeology and Anthropology, Vol. III, No. 5, pp. 173–206, 34 figures, July, 1937.)

This report is a record of the excavation by Mr. John L. Buckner of a series of subsurface burials covered with limestone slabs. From one to eight extended or partly flexed bodies were placed in parallel individual graves within each of eight burial units. Earth was then placed over the bodies and at the top of the subsoil a horizontal pavement of limestone slabs covered or extended beyond the grave unit. Thirty burials were exposed but only nine were accompanied by artifacts. The total number of artifacts was also small: two concavo-convex two-whole bone gorgets cut from the leg of some large mammal; two wolf mandibles cut horizontally near the roots of the teeth; thirty-seven pierced elk incisors; a rectangular two-hole gorget of slate; a sandstone elbow pipe with squared sides and a sharp angle at the junction of stem and bowl; an unpolished greenstone celt and a broken celt; two stemmed projectile points; two small concave disks of copper; and galena fragments.

The photographs and descriptions of the excavation indicate careful field technique but some of the figure titles are hardly apropos. A rather unusual feature is the inclusion of measurements in inches of skeletons in the field! The discussion of the artifacts is even more brief than the small number would warrant, and the trait list is incomplete even though two negative traits are included. A connection between this site and a large number of low stone mounds in the Ohio Valley is cited in the summary.

It might be noted that in the Peabody Museum, Harvard University there

is an almost identical bone gorget from the Edwards Mound in Hamilton County, Ohio. This was an earth mound which contained a circular stone wall 36 feet in diameter and is suggestive of a division of the Adena-Hopewell culture. A broken piece of a similar gorget was found by Black in a stone slab mound in Dearborn County, Indiana. The points are very similar to some of those found in Adena mounds. One interpretation of the cultural connection of sites of this type is that it represents a local manifestation of a wide-spread Woodland mortuary complex which was later incorporated in the Adena-Hopewell culture. The pipe is shaped like one found in a Copena mound in northern Alabama and one from Crystal River, Florida.

JAMES B. GRIFFIN
University of Michigan

The Chiggerville Site. W. S. WEBB and W. G. HAAG. (University of Kentucky Reports in Anthropology, Vol. IV, No. 1, pp. 1–62, 23 figures, March, 1939.)

This is the first of a series of reports on archaeological work in Kentucky done with WPA labor under the supervision of the University of Kentucky. Mr. David B. Stout was the field archaeologist. This site is a shell mound on Green River, Ohio County not far from the famous Indian Knoll excavated by Moore in 1915. The report can be divided into three sections. The first gives a map of the location of the site and its relationship to others in the vicinity, and also a plan of the excavation. This plan indicates that a reasonably complete sample of the material available was probably obtained. The location of the site, field methods and description of the burials and physical features are condensed into less than ten pages. Forty-eight fireplaces or areas 5 to 10 feet in diameter with a concentration of fire-cracked rock and burned earth were the only indications of habitation. A total of 114 burials was found. Practically all of these were in various flexed positions. The majority were apparently placed on their backs with the arms and legs arranged in various angles and positions. There were five dogs buried with adults. Only a little more than a fourth of the burials had artifacts, and of these the great majority were with children. A table gives the artifact distribution with regard to the burials. A distinction is suggested between artifacts included in a grave as wearing apparel and those intentionally placed as offerings.

The artifacts are described briefly in approximately five pages of text and nine figures. The majority are types which did not occur with burials. The Middle Mississippi pottery found on the surface is described in less than one page and with one illustration. Other artifacts thought to be associated with this pottery are not pictured or included in the trait list.

The second section of the report takes up over half of the text dealing with the site and is a competent study of the physical characteristics of the burials by Ivar Skarland. This is briefly reviewed below.

The third section of the report is devoted to the presentation of evidence

from this and other shell mound sites showing that this cultural group used antler hooks as the distal ends of atlatls and that banner stones and many another "ceremonial" stone were in reality attached as weights to the atlatls. A total of four antler hooks and 13 atlatl weights of stone and shell sections were obtained from this site. There is a marked difference in both quantity and quality between this site and Indian Knoll in the use of such weights, and the difference is even more strongly developed in the Northern Alabama shell heaps excavated under the general direction of the senior author.

A trait list of 70 items comparing Chiggerville with Indian Knoll is added. The list was drawn up with the Chiggerville site as the point of reference. It is one of the most complete now in print.

There is in this report a welcome awareness to the question of the succession of cultural groups on a single site and of the significance of artifact assemblages as indicative of discrete cultural units. This number is the best of the University of Kentucky series. Future bulletins on related sites will no doubt contain a full description and analysis of the artifact types associated with the shell mound people and their relationship to early horizons in the Southeast and Northeast. When cultural data are obtained by carefully documented field work they deserve such a comprehensive comparative treatment.

JAMES B. GRIFFIN
University of Michigan

The section on the skeletal material from the Chiggerville Shell Heap in Ohio County, Kentucky, by Ivar Skarland is a welcome contribution to the body of physical data that is being accumulated on this early southeastern group. This detailed report by a competent physical anthrolopogist marks an important step in the right direction, not only towards the solution of the physical relationships and migrations in the Southeast, but also in shedding light on the origin of the carriers of the later more complex cultures of the whole eastern United States.

The Chiggerville series of 24 male crania represents a small series statistically speaking. However, if it is added to the Pickwick series of 55 male crania measured by M. T. Newman and C. E. Snow, the Indian Knoll series of 33 male crania originally described by A. Hrdlička and two other series being measured by H. T. E. Hertzberg, the physical anthropologist and archaeologist will soon be supplied with data on an adequate random sample of the early shell-heap population of Kentucky and Alabama. Not until all these series have been described and compared for purposes of pooling them can we make any statement as to the racial affiliations of this group. The tentative comparison to Hooton's typed series of "Pseudo-Australoids" from Pecos may not be a valid one.

GEORG NEUMANN
University of Michigan

Pajarito Plateau and Its Ancient People. EDGAR L. HEWETT. (Publication of the University of New Mexico and The School of American Research, Handbooks of Archaeological History. The University of New Mexico Press, 1938.)

This is the third of a series of Handbooks of Archaeological History to be issued by the University of New Mexico and the School of American Research. It is to be followed by another also from the pen of Dr. Hewett, on the Rio Grande Valley. The objective of the series is to provide handy non-technical summaries of New Mexican prehistory, aimed apparently at the general reader rather than the specialist. The method which Dr. Hewett has adopted in the present volume may be indicated by a brief outline. The book is divided into four parts. The first consists in a brief statement pointing out the value of archaeological remains as historical records and calling attention to the importance of making use of ethnological data in interpreting them. The second part is a sort of field guide to the most striking ruins of the Pajarito Plateau. The third contains brief summaries of Dr. Hewett's excavations in the region. The fourth includes non-technical descriptions of pottery, pictographs, and shrines. As appendices, appear an excellent account of pictographs by Kenneth Chapman and an exhaustive though brief sketch of the history of the region by Sylvanus Morley.

The focus of attention is on the relationship of the Puye group of ruins to the modern Tewa and those of the Rito de los Frijoles to the modern Keresans. The conclusion presented is that the people who occupied Puye contributed to the Tewa, but that they constitute only one element in the latter. It is pointed out that the prehistoric inhabitants of Puye were predominantly dolichocephalic, while the modern Tewa are brachycephalic. Similarly, it is held that the people of the latest prehistoric period in the Rito de los Frijoles may be regarded as contributing one element to the modern Keresan population.

The book is evidently intended for persons like the present reviewer, who are unfamiliar with the region. It seeks to awaken interest in the archaeological remains by colorful description of their natural surroundings, by historical anecdotes of the excavators' experiences, and above all, by suffusing them with the color of modern Pueblo life. The author has avoided any but the most superficial attempt to fit the prehistory of the Pajarito Plateau into the wider context of Southwestern prehistory, or even to point out relationships to neighboring areas. The time perspective remains hazy. The book is therefore less a history than a literary interpretation. It is essentially a record of the author's own experiences with and reactions to the Pajaritan ruins.

Throughout, there appears a dislike for the intensive analysis characteristic of present-day archaeological research. Pottery and masonry types do not interest the author and, consequently, the problems of prehistoric relationship on which such classification sheds light do not receive discussion. There is a frequently reiterated skepticism as to the possibility of discovering anything sig-

nificant about the early Pajaritans through more intensive analysis of their remains. The results of this skepticism are indicated in the absence of reference to the archaeological findings of the author's contemporaries.

The considerable concern with ethnological interpretation of archaeological data calls for mention of methods employed. The ventilator interpretation of the kiva shaft is flatly rejected on the ground that modern Pueblos insist that it is a means of ingress and egress for spirits. This interpretation, of course, ignores the abundant archaeological data from the Southwest indicating the use of the shaft in domestic dwellings. The present-day ritual interpretation may be accepted fully, and yet historical perspective requires that we admit a utilitarian origin. In this instance, as in others, Dr. Hewett seems to fall into the error of a wholly uncritical acceptance of statements by Indians. Another feature of the ethnological method employed is the principle that statements by Indians of fifty years ago are *per se* more reliable than those of the present. This applies particularly, it is held, to statements concerning the relation between prehistoric and modern peoples. It is difficult to see, in the first place, why this should be true and, in the second, how we might use the fact if it were. It is certainly true that Pueblo folk knowledge is changing and even, perhaps, disappearing, but the legends, like all others, have been changing for centuries. The people of fifty years ago were very little closer to the events on which the legends may have been based than are those of the present. However, granting that the people of fifty years ago had more and better remembered folk knowledge, then how are we to proceed? Should we place more confidence in material gathered two generations ago by one or two unchecked observers than in data that can be gathered and rigorously checked at present? Such a tenet of ethnological method leaves us very definitely up a stump.

What Dr. Hewett has done in his handbook is to describe in a colorful manner the Pajaritan country and some of its ruins. The pages are pervaded with a nostalgic feeling for an imagined past in which "life flowed rhythmically . . . youth found the age-long way of life . . . "and "old age blessed the people with wisdom and knowledge." Addressing the reader in his foreword, the author says, "You, too, can quietly dream yourself into unity with this immutable universe."

EDWARD H. SPICER
University of Arizona

Prehistoric Culture Units and Their Relationships in Northern Arizona. H. S. COLTON. (Museum of Northern Arizona, Bulletin 17, Flagstaff, Arizona. October, 1939.)

This small but important publication by Dr. Colton is a step toward the synthesis for which the Museum's publications on pottery types provide most of the basic analytical material. As Dr. Colton says in the preface, it is really analysis itself; it consists of classification of the archaeological material of most

of northern Arizona into small divisions limited by time and space and the combination of these into larger divisions—a detailed, useful, and promising classification.

Dr. Colton has revised and modified the Gladwin system (*A Method for Designation of Cultures, etc.*, Gila Pueblo, Medallion XV, 1934) taking over from the Midwesterners the terms "component" and "focus," but retaining the terms "branch," "stem," and "root" for the larger categories, terms that seem preferable to the parallel terms of the McKern system for use in the Southwest. The genetic and temporal approach seems more desirable in a region such as this where chronology is relatively well-known.

Thus the various manifestations in the area north of Holbrook and Flagstaff, part of the Anasazi area or Pueblo area proper, are classified into successive foci of the "Kayenta branch" and the "Tusayan branch." The Kayenta branch, a major division of the Anasazi root, is the basic culture in northern Arizona between 500 and 1300 A.D.: the Tusayan branch is the local specialization of the Kayenta in the Hopi country from 900 to the present.

Cultural manifestations, mainly in the vicinity of Flagstaff, not assignable to the Anasazi root, are assigned more or less tentatively to Hohokam, Mogollon and Patayan roots. Whether or not Colton has properly classified and interpreted the undoubted Hohokam and Mogollon influences can be better determined after the publication of the Winona papers. "Patayan" replaces Gladwin's "Yuman root" for the archaeological remains of western Arizona.

The Pecos classification, criticised and modified, but still in use in one form or another, is an important and useful classification: the Gladwin-Colton system should supplement rather than replace the Pecos system, which is horizontal and concerned with similarities over a wide area during a given time, while the Gladwin-Colton system traces lineages and is more concerned with similarities in a given region over a long range of time. The Pecos system has been valuable for bringing order into Southwestern archaeology, and can continue to be used to advantage; more detailed classification from a different approach is obviously needed.

Those "conservatives" who prefer the Pecos system, and feel that the new system creates unnecessary complexity, are at liberty to follow it. They can translate these foci and branches into a broader horizontal system more easily than "radicals" can translate generalized publications into terms of detailed classification. Synthesis of analyzed data is less arduous than attempting to analyze generalized data.

This is true not only as regards foci and branches, but also as regards major divisions and affilitation of branches to roots. Here is the topic which will probably be viewed most askance, particularly the "Patayan root" and Dr. Colton's method of affiliating certain branches thereto. The method and results are, however, given as tentative. The proper relationship of this western Arizona material can best be discovered after the material has been segregated and labeled.

These general objections on principle can best be answered, the reviewer feels, with the words which Dr. Colton has used in defence of hairsplitting in the *Handbook of Northern Arizona Pottery Wares:* "Synthesis is only as accurate as the analyses which preceded it. Many students think that Southwestern archaeology is a finished study because works of synthesis have been published, but the analysis that preceded this synthesis is, in many cases, insufficient for the conclusions drawn."

It is unfortunate that Bulletin 17, like many of its predecessors in the Museum of Northern Arizona series of Bulletins, is too small, too concise, not too well written, very poorly edited and inadequately illustrated. The handling of bone and shell is unsatisfactory and inadequate, but this is probably largely due to the unsatisfactory nature of the publications utilized by the author in preparing this work. Stonework is more consistently summarized in a fairly adequate manner. The treatment of architecture is usually sufficient for the immediate purpose. Pottery is, of course, most clearly given. The perishables might better have been omitted; the non-comparable categories might have been deferred until the separate paper on each and every focus which will be necessary to give the total picture of its culture and its relationships so far as known.

Miss Bartlett's treatment of the human skeletal material is extremely unsatisfactory. She follows Dixon's arbitrary "racial" classification religiously although it is almost universally fallen into disrepute. She gives only the number of skulls in each of Dixon's categories—neither measurements nor any statement as to variation or range of distribution is given. There is no comparison with Hooton's types.

The application of the Gladwin system to northern Arizona seems well worked out. The author has not succumbed, as he and Hargrave have on occasion, to the librarian complex—a psychosis compelling pigeon-holing of everything, with no loose ends, and a new pigeon-hole for every item that doesn't quite fit the existing ones. Although there are no foci set up that the reviewer definitely feels are really unjustified as separate groups, the distinctions are, in some instances not of major importance. For instance the Coconino focus and Medicine Valley focus of the "Cohonina branch" of the Patayan root are distinguished principally on the basis of stonework; if these are indeed valid and consistent distinctions, separation is perhaps justified. There are several other cases of paired foci that might have been combined into one, or that may be in the future when better known.

There are many minor slips, some, perhaps, of greater importance, that are undoubtedly due to faulty editing:—the map, Fig. 1 is clever but so complex that it cannot be used; the choice of Coconino and Cohonina for focus and branch is confusing; failure to reconcile properly the known tree-ring dates with the period dates for foci; the slips permitting the retaining of old working names for pottery types instead of the forms that have superseded them.

Despite the minor flaws and possible errors listed, and unavoidable state-

ments of somewhat controversial nature (such as affiliation of certain branches to Patayan and Mogollon roots, which may be doubted by many—and which is *not* stated as fact, but as working hypothesis, by Dr. Colton), this publication is an extremely important contribution to Southwestern archaeology, and it is to be hoped that Dr. Colton will continue and expand this line of work.

A word on one of the controversial topics. Many will be hesitant, to say the least, about "branches" of Mogollon origin, or at least affiliation, in the Flagstaff area and the Verde. Yet there is indubitable Mogollon influence evident in these regions, aside from whether the Mogollon complex is considered separate from Anasazi or not, and the description by Dr. Colton of the "Sinagua branch" and the "Los Reyes branch" clarifies this Mogollon element and ties it down to specific things. The gap between this area and southwestern New Mexico will be partly filled by Dr. E. W. Haury's work at Forestdale; this strong Mogollon element, so far to the west of the sites at which the complex was first recognized, suggests an early Mogollon continuum, as yet only partly discovered, all the way along the forested mountain axis dividing the plateau country of the Anasazi from the desert-land of the Hohokam.

In this item and in many others, Dr. Colton's work at least sets up something to shoot at, and at least gets the data out in compact and usable form; more usable, despite the bewildering variety of names, than the narrative approach or the completely descriptive, unclassificatory approach. It is regrettable that so important a contribution is marred by careless editing.

ERIK K. REED
Sante Fe, New Mexico

Preliminary Report on the 1937 Excavations, Bc 50–51. Chaco Canyon, New Mexico. With Some Distributional Analyses. University of New Mexico Bulletin, No. 345. (Oct. 15, 1939.) Edited by CLYDE KLUCKHOHN and PAUL REITER. (190 pages. Illustrated. Price $1.00.)

This bulletin consists of a series of papers contributed by ten authors, mostly students, who have had some interest in the work, or were qualified to contribute to the subject. The report is divided into four major parts, and three appendices. Each major part is further subdivided into sections contributed by various authors.

The site under consideration, Bc 51, located near the south cliff in Chaco Canyon, within a mile south of Pueblo Bonito and Chetro Ketl, is a small pueblo, dating roughly within the tenth and eleventh centuries. During the short period of occupation of approximately two hundred years, which on the basis of general ceramics might be considered to have been during Pueblo II to Pueblo III times, the occupants carried on a wide trade, particularly with the middle San Juan region and even with places as distant as Flagstaff, Arizona. In part, the ruin is contemporaneous with the great pueblos in this section, but the possibility of their late occupation, without attendant late tree-ring dates,

may have led to some of the resulting confusion. Such has been demonstrated to have been the case at Wupatki Pueblo in Arizona, where the reuse of beams was widespread. In fact, the ecological situation seems to have been comparable in the two cases.

Part I, a discussion of the excavation of the refuse mound, is divided into Section A, dealing with culture complexes and their succession in the trash mound, by Florence Hawley, and Section B by Senter. Hawley reviews the question of pottery complexes setting up the following: (1.) Lino Gray pottery complex, (2.) Red Mesa pottery complex, (3.) Escavada pottery complex. The establishment of these complexes is a distinct contribution as is the observation of a lack of correlation between cultural and natural levels and the noting of the survival of sherds identified as Lino Gray.[1] The problem of the late survival of Lino Gray sherds, a fact repeatedly observed in other regions, interests the author. One is inclined to wonder if the total sherds listed in the examples represent the complete series on which the complexes rest (in the case of the Lino Gray complex a total of twenty-eight) since there is no mention of the total number of sherds handled in establishing each complex. This reviewer would like to have seen a summary evaluation at this place, stating the general culture stage of the site as based on the pottery, and some illustration of the cultural arrangement of segments in the trash mound section.

Senter makes the first broad suggestion of a date. He attempts to correlate cultural and natural strata but without success. He expresses interest in the source of the natural layers and makes a few suggestions as to the possible causes. The advisability of choosing six-inch sections for artificial strata is open to question. It is also felt that a historical reconstruction of the building of the mound might be more simply presented, and that, if causes of sherds moving down are considered, the work of frost and rodent action in moving them up should also be mentioned.

Part II, entirely by Kluckhohn, deals with the excavation of nineteen rooms, six kivas and certain "substructures" in Bc 51. The "substructures" are not here clearly defined, but are discussed in a later chapter.

This chapter presents a good objective summary of architectural details, covering masonry, kiva wall paintings and the character and condition of the room fills. Although two tree-ring dates were secured and although it must be possible to date this site quite accurately by a seriation process, estimates of dates as discussed here still remain somewhat vague.

Part III deals with the artifacts. Section A, by Hawley, lists additions to the previous descriptions of the Chaco pottery types, fulfilling a most definite need. Section B, by Douglas Osborne, deals with the utilized minerals and rocks and their sources. In Section C, Richard Woodbury discusses ground and pecked

[1] In this connection see Colton "Notes on a Pottery Type called Lino Gray," AMERICAN ANTIQUITY, Vol. V, p. 338. Colton's note and this review were received at the same time but it was not possible to publish them together. (ED.)

stone artifacts other than arrow shaft tools, but does not discuss certain phases which might have been helpful. The descriptions of the material from the site are somewhat sketchy. There are no illustrations and no clear-cut correlations with culture horizons. The distribution studies illustrated by a series of maps form an excellent beginning to a most important problem. Toulouse, in Section D, might have drawn a slightly sharper distinction between ridged and simple grooved types of arrow shaft tools. Section E, in which Charles Bohannon deals with projectile points and chipped implements, is chiefly description, but includes several sketches which are a relief from the usual lack of illustrations of the objects from the excavations. Tschopik's Section F, covering artifacts of perishable material, includes brief descriptions but no illustrations and comparisons and distribution studies of a more detailed nature. Although his summary of basketry studies is an excellent review, there is a strong tendency to raise general theoretical questions and answer few. Mary Whittemore handles the artifacts of bone, antler and shell very capably in Section G. Section H, by Kluckhohn, discusses subsistence remains in a very general way.

Part IV, the general discussion by Kluckhohn, should be, and is, the most interesting section dealing with general problems. The difficulty of correlating culture stages with time periods is pointed out as is the general lack of definitions of the basis of identifying a stage of culture. He classifies the site under consideration as Developmental Pueblo, after rejecting Pueblo II as a descriptive term, because he feels that the latter is usually based on total traits found and because of the difficulty of correlating culture stages in periods. The tree-ring dates which place this site in the eleventh century raise the problem of the justification of the coexistence of this small site with the great Chaco sites less than a mile away. Several theories are suggested in explanation, and the problem of indicating such relationships is also discussed. He reaches a decision that a modified Gladwin system, such as that used by Colton, is probably advisable, but does not apply it and leaves the entire question of the classification of Chaco cultures dangling in the air.

Appendix A, by Senter, lists only a few means of the physical anthropological series from Bc 50–51. Although he has given a most complete list of the range and mean of individual features, no one individual is identifiable. The value of such lists is certainly open to question. It is to be sincerely regretted that more complete individual measurements and a brief interpretation could not have been included. Appendix B by Nan Ashton Glenn, covering the substructures of mound 50, is a good report of detailed architectural features. This reviewer is impressed with the lost opportunity of following the building stages and a reconstruction of the history of the site.

With the full realization that it is simpler to criticize than produce, an evaluation of the report is certainly in order. The editorial task of correlating so many papers by individual writers is a difficult one, but two distinct subjects, the report of the site and distributional studies of various traits, are clearly evident. Two separate reports, perhaps bound together, should have

been made had it been possible, the first covering the site, the second dealing with distribution studies of traits. The present arrangement leads to the confusion of both problems and buries valuable and useful data, such as that on distributions, in a general text. A statement as to the special data and general cultural stage represented by the site could have been presented early in the paper to satisfy one of the first questions asked by a reader. Much of the detailed field data might have been filed in the home office, available for examination. The problem of just how much to include is always a troublesome one. Had the illustrations been better arranged and prepared even more data might have been omitted.

One of the most serious criticisms this reviewer has with the paper is that the most excellent maps are too small for ready interpretation. Many of them might have been enlarged in size and made more easily readable by the removal of a few peripheral examples. Although a great deal of data is often included with each map, giving it a slight Chinese puzzle flavor, all may be worked out with the aid of a lense.

Many excellent features are found in this report, such as the deliberate notation of burial-cultural associations, pottery complexes, etc., but interpretations might be enlarged. A more general comparison with site Bc 50, and others in this area, would go far toward determining the cultural and temporal position of the site.

Throughout the entire report there is a tendency to theorize, criticize, and point out needs, but not to rearrange, reorganize, and present in any new pattern. In general, however, it is a most valuable contribution to Southwestern archaeological studies, but, like a hickory-nut, somewhat difficult to get at. An index would of course help. The distribution studies begun here should certainly be carried on.

J. C. McGregor
Flagstaff, Arizona

Preliminary Report of the Smithsonian Institution-Harvard University Archaeological Expedition to Northwestern Honduras, 1936. William Duncan Strong, Alfred Kidder, II, and A. J. Drexel Paul, Jr. (Smithsonian Miscellaneous Collections, Vol. 97, No. 1; Publication 3445, 129 pp., 15 photographic plates and one in color, 32 text figures. Washington, 1938.)

Since the imposing masonry buildings, splendid stone sculpture, and hieroglyphic writings of Middle America are unique, it is only fair to ask archaeology to build up a reasonably clear picture of developments in this area. To give us the complex pattern of cultural streams, a deposit of potsherds may be more important than a perfectly preserved building. The great importance of this publication is derived not only from the careful digging, recording, and analysis of such simple deposits, but also from the strategic location of the area under study. The district, including portions of the drainages of the Ulua and Cha-

melecon rivers and the north shore of Lake Yojoa, is one of the easiest transcontinental routes between the Isthmus of Tehuantepec and Panama. It is hard by the southerly and easterly limit of Maya "Old Empire" sites, and about at the linguistic border of Maya and non-Maya speakers of South American affiliation. The Spanish appeared here early, and left numerous accounts of ethnographic value.

The first twenty-seven pages form a splendid introduction, giving backgrounds, which, with the well-stated tentative conclusions, makes the report of value to non-specialists, whether interested in the minutiae of ceramics or not. Most of the report consists of a very meaty ceramic description. Cross sections of rim forms are apparently postponed to the final report to be written by the senior author and published by the Peabody Museum of Harvard. Ceramic types are distinguished by form and decoration, apparently with greatest reliance on the latter.

The authors freely acknowledge their debt to Mrs. Dorothy H. Popenoe, whose establishing of the Playa de los Muertos culture in 1927 and 1929 was one of the first carefully documented archaeological projects in the region. One of the immediate results was to provide an adequate undisturbed deposit of unselected Playa de los Muertos material. The authors' sherds of this type, stratified below Mayoid types, correspond to whole vessels of Popenoe, Gordon and other collections, many of which are illustrated.

The following sequences of pottery types are postulated, with the latest first: For the Ulua district—Naco Polychrome (historic); Upper and Lower Ulua Polychrome (each of which includes Mayoid and Bold Geometric styles); Ulua Bichrome; Playa de los Muertos Bichrome. For the Lake Yojoa district—Yojoa Polychrome (including Mayoid and Bold Animalistic styles); Yojoa "Monochrome." Mayoid and styles found with it are contemporary parallel developments, not sequences, necessitating a change in the sequences suggested by Vaillant on stylistic grounds alone. There is a table equating Vaillant and Gordon type designations (numbers and letters respectively) with those used for the same things here. This necessary reversal of former opinions is a good argument in favor of the descriptive terms. Admitting a similar earlier mistake by Strong himself, his terms for related Bay Island types, Bay Island Polychrome I and II are now also misleading.

"Considerable resemblance" is seen between Playa de los Muertos Bichrome and the two earliest pre-polychrome horizons at Uaxactun, in the heart of the Maya Old Empire. If borne out by final publications for both sites, the bearing on the problem of Maya origins is obvious. Lower Mayoid seems to include close resemblances to Maya Old Empire figure painting, late in the Old Empire sequences, though the reviewer does not recall a definite statement to this effect. But there is a suggestion of a Maya dispersal resulting in the grafting of developed Maya styles on those of their neighbors. For the Ulua this is the suggested cause of finding Mayoid wares with Bold Geometric, the later ascribed to Jicaque Indians; for the Lake Yojoa district, of Mayoid with Bold Animalis-

tic, the later ascribed to the related Lenca. The historic Naco Polychrome is assigned to late Mexican incursions. An attempt to correlate the identified sequences with Maya chronology at nearby Copan was given up, pending more knowledge of pottery at that site.

The great mound site of Los Naranjos, described by Mrs. Dorothy Zemurray Stone as the southernmost Maya city, was visited. The authors doubt this attribution which, in fact, rested on rather slim evidence. Quite apart from Maya influence, ceremonial buildings of the region need not have been mere bush-houses, though apparently generally built of perishable materials. Mrs. Stone saw stone-faced adobe walls at Los Naranjos; this expedition found plaster floors associated with Mayoid pottery, and evidence of wattle-and-daub buildings on the early Playa de los Muertos horizon. This latter construction occurs early at Piedras Negras, in the western Old Empire Maya region, where a final coat of white lime plaster was applied, but usually has disappeared from surviving fragments. A fragment of a stone ring was found in the ball court at Naco.

The description is site by site, and an index or paged check-list of objects and materials would have been useful in directing readers to such items of special interest. Failure to specify in some captions the specific sub-type of the pot illustrated makes them less immediately useful, and easily findable complete descriptions of each pottery type would have been welcome. Nevertheless, although a preliminary report, the work is well planned to make the results thus far worked out immediately available.

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